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355

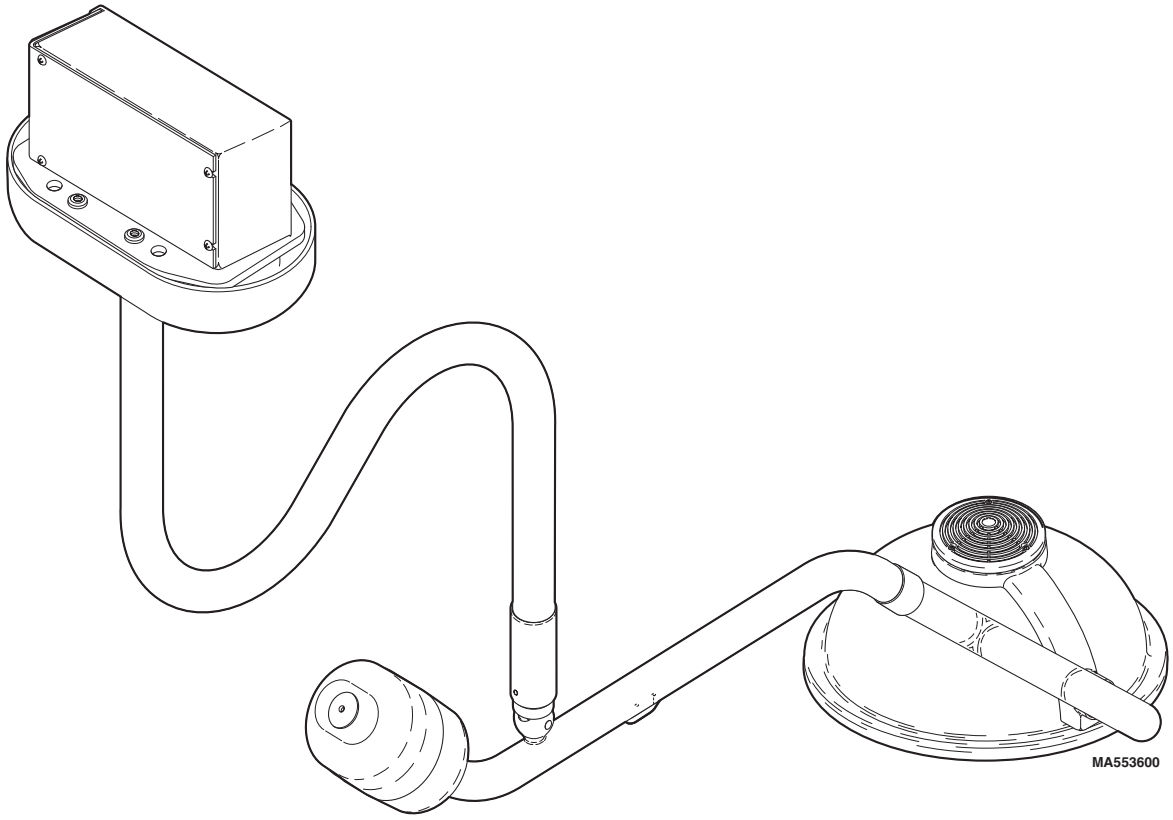
-001 thru -004
-007 thru -010
-012 thru -015

Ritter® by MIDMARK

Ceiling Lighting System

Service and Parts Manual

Serial Number Prefixes:
FS, FT, HV, HW, JC & JD



IMPORTANT - This Manual is for a Unit with a 12 Volt Secondary Output!

This lighting system uses a 12 Volt secondary output (from transformer). Some Midmark lighting systems use a 24 Volt Secondary output. Make sure to verify the Model and Serial Number of the lighting system you are servicing to ensure that this is the correct Service and Parts Manual.

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

SF-1594

Part No. 004-0105-00 Rev. G (1/01/04)

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General Safety Instructions

Safety First: The primary concern of Midmark Corporation is that this mobile lighting system is maintained with the safety of the patient and staff in mind. To assure that services and repairs are completed safely and correctly, proceed as follows:

(1) Read this entire manual before performing any services or repairs on this mobile lighting system.

(2) Be sure you understand the instructions contained in this manual before attempting to service or repair this mobile lighting system.

Safety Alert Symbols

Throughout this manual are safety alert symbols that call attention to particular procedures. These items are used as follows:

DANGER

A DANGER is used for an imminently-hazardous operating procedure, practice, or condition which, if not correctly followed, will result in loss of life or serious personal injury.

WARNING

A WARNING is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

CAUTION

A CAUTION is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT

An EQUIPMENT ALERT is used for an imminently or potentially hazardous operating procedure, practice, or condition which, if not correctly followed, will or could result in serious, moderate, or minor damage to unit.

NOTE

A NOTE is used to amplify an operating procedure, practice or condition.

Warranty Instructions

Refer to the Midmark “Limited Warranty” printed in the Installation and Operation Manual for warranty information. Failure to follow the guidelines listed below will void the warranty and/or render the 355 Mobile Lighting System unsafe for operation.

- In the event of a malfunction, do not attempt to operate the mobile lighting system until necessary repairs have been made.
- Do not attempt to disassemble mobile lighting system, replace malfunctioning or damaged components, or perform adjustments unless you are one of Midmark’s authorized service technicians.
- Do not substitute parts of another manufacturer when replacing inoperative or damaged components. Use only Midmark replacement parts.

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SECTION I
GENERAL INFORMATION

1.1 Scope of Manual

This manual contains detailed troubleshooting, scheduled maintenance, maintenance, and service instructions for the 355 Lighting System. This manual is intended to be used by Midmark's authorized service technicians.

1.2 How to Use Manual

A. Manual Use When Performing Scheduled Maintenance.

(1) Perform inspections and services listed in Scheduled Maintenance Chart (Refer to para 3.1).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance / service instructions (Refer to para 4.1).

B. Manual Use When Mobile Light Is Malfunctioning And Cause Is Unknown.

(1) Perform an operational test on Light (Refer to para 2.1).

(2) Perform troubleshooting procedures listed in Troubleshooting Guide (Refer to para 2.2).

(3) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance / service instructions (Refer to para 4.1).

C. Manual Use When Damaged Component Is Known.

(1) Replace or adjust component in accordance with maintenance / service instructions (Refer to para 4.1).

1.3 Description Of 355 Lighting System

A. General Description (See Figure 1-1).

The 355 Lighting System is a general purpose lighting system designed specifically for performing general medical examinations and procedures. Listed are the two different models available:

355 (-001 thru -004 & -007 thru -010)..... 120 VAC Models
355 (-012 thru -015)..... 220 VAC Models

The major serviceable components of the lighting system are the transformer, fuse / fuse holder, bulb socket, ON / STANDBY switch, main pivot stop, counterbalance assembly, ball pivot joint assembly which includes ball pivot stop, lamp tube pivot stop, lighthead pivot bearing stop, lamp tube brake assembly, lighthead brake assembly, and top cap assembly.

B. Model 355 (-001 thru -004 & -007 thru -010) Theory of Operation (See Figure 5-1 for wiring diagram / electrical schematic)

Line voltage is supplied thru the line fuse (F1) to the transformer. If too much current is drawn by the lighting system's circuitry, the line fuse (F1) blows. The transformer will provide 12.27 +/- 0.37 VAC output to power the light circuit based on an ideal 120.0 VAC input. Because there are facilities which cannot supply the ideal level of input voltage, the transformer is designed with three different primary input taps which can be used, based on the voltage level available at a particular facility. If the facility's voltage is 117.0 VAC or lower, the 114.0 VAC (yellow) transformer input tap must be used. If the facility's voltage is between 117.1 to 123.0 VAC, the 120.0 VAC (orange) transformer input tap must be used. If the facility's voltage is 123.1 VAC or higher, the 126.0 VAC (red) transformer input tap must be used. Using the correct transformer input tap will result in a transformer output of 12.27 +/- 0.37 VAC.

When the ON / STANDBY switch is switched to ON, the output voltage from the transformer secondary tap is applied across the bulb assembly causing the bulb to illuminate. Turning the ON / STANDBY switch to STANDBY opens the circuit, causing the bulb to stop illuminating. However, power is still applied to the primary side of the transformer.

C. Model 355 (-012 thru -015) Theory of Operation (See Figure 5-2 for wiring diagram / electrical schematic)

Line voltage is supplied thru the line fuse (F1) to the transformer. If too much current is drawn by the lighting system's circuitry, the line fuse (F1) blows. The trans-

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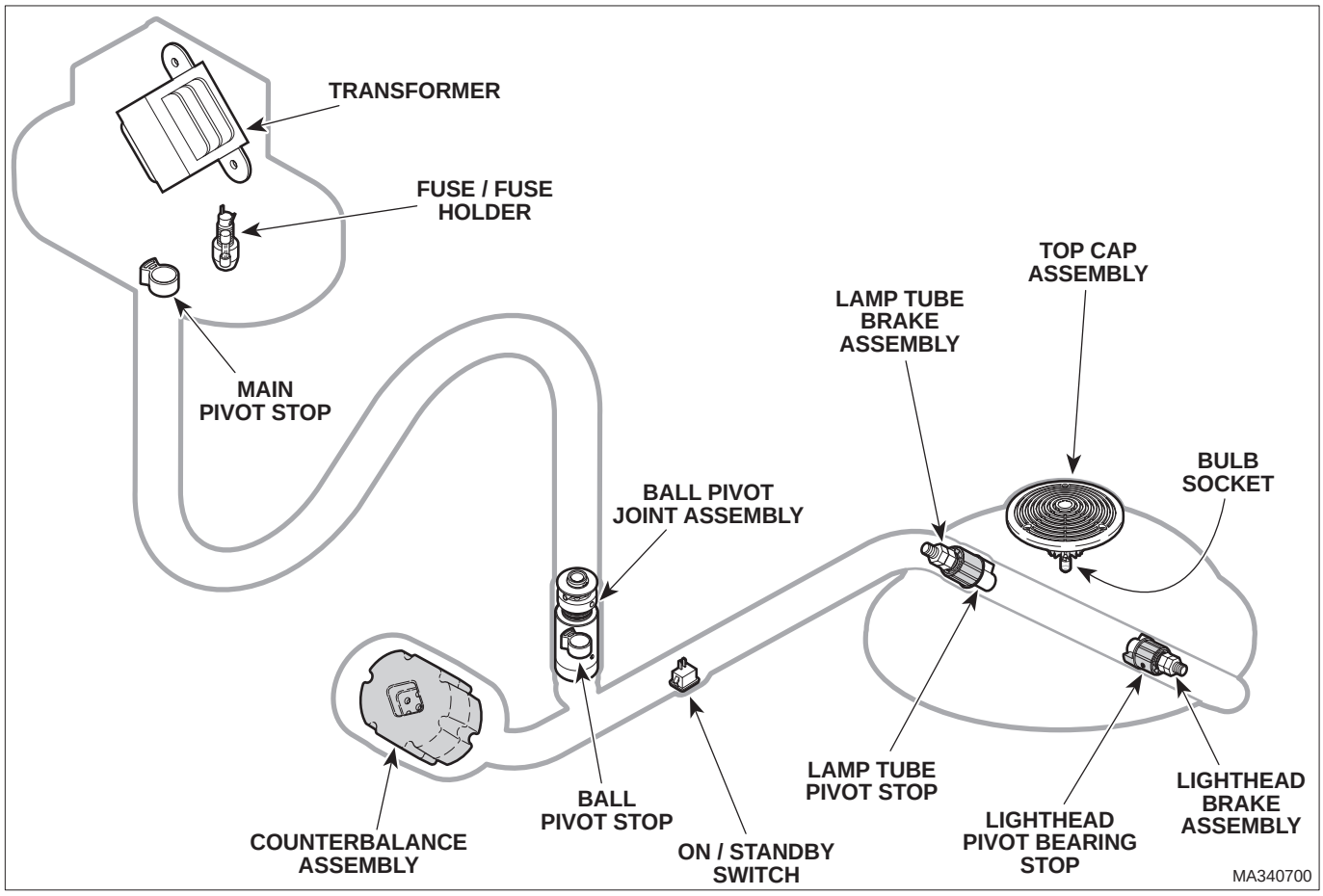

Figure 1-1. Major Components

former will provide 12.27 +/- 0.37 VAC output to power the light circuit based on an ideal 220.0 VAC input. Because there are facilities which cannot supply the ideal level of input voltage, the transformer has three primary input taps which can be used, based on the voltage level available at a particular facility. If the facility's voltage is 225 VAC or lower, the 220 VAC (yellow) transformer input tap must be used. If the facility's voltage is between 225.1 and 235.0 VAC, the 230 VAC (orange) transformer input tap must be used. If the facility's voltage is 235.1 VAC or higher, the 240 VAC (red) transformer input tap must be used. Using the correct transformer input tap will result in a transformer output of 12.27 +/- 0.37 VAC.

When the ON / STANDBY switch is switched to ON, the output voltage from the transformer secondary tap is applied across the bulb assembly causing the bulb to illuminate. Turning the ON / STANDBY switch to STANDBY opens the circuit, causing the bulb to stop illuminating. However, power is still applied to the primary side of the transformer.

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1.4 Specifications

Factual data for the 355 Lighting System is provided in Table 1-1. Also, see Figure 1-2.

Table 1-1. Specifications

Description	Data
Weight of a Unit:	
8 ft (2.44 m) single light	54.0 lbs (24.5 kgs)
9 ft single light	55.0 lbs (25.9 kgs)
8 ft (2.44 m) dual light	100 lbs (45.3 kgs)
9 ft (2.74 m) dual light	102 lbs (46.3 kgs)
Torque load of a unit on its ceiling plate:	
8 ft (2.44 m) single light	68 ft-lbs (92.1 N•m)
9 ft (2.74 m) single light	68.2 ft-lbs (92.5 N•m)
8 ft (2.44 m) dual light	133 ft-lbs (180.3 N•m)
9 ft (2.74 m) dual light	135 ft-lbs (183.0 N•m)
Shipping Carton:	
Single Unit	50.75 in. "L" x 27.25 in. "W" x 10.5 in. "H" (128.9 cm x 69.2 cm x 26.7 cm)
Beam diameter @ 36 inches:	8 in. (20.3 cm) (defined by 20% of peak illumination
Color Temperature:	3,200K
Diameter of Lighthead:	17 in. (43.2 cm)
Focal Length:	36 in. (91.4 cm)
Illumination:	4,000 fc - 47,000 lux
Reach of Arm Assemblies:	49 in. (124.5 cm) maximum (from centerline of down tube to center of lighthead)
Rotation of Lighthead:	180° of rotation at lamp tube connection
Rotation of Lamp Tube:	540° of rotation at cross tube connection
Rotation of Cross Tube:	580° of rotation at down tube connection
Vertical Range of Cross Tube:	-35° to +35° of vertical movement
Rotation of Down Tube:	580° of rotation at ceiling plate connection
Bulb:	12 VAC, 100 W Halogen Bulb
Electrical Requirements:	
355(-001 thru -004 & -007 thru -010)	110-120 VAC, 60 HZ, 1.25 amp, single phase
355(-012 thru -015)	220, 230, or 240 VAC, 50/60 HZ, 0.7 amp, single phase
Power Consumption:	
355(-001 thru -004 & -007 thru -010)	11.2 VAC @ 8.5 amps = 95.2 WATTS
355(-012 thru -015)	11.2 VAC @ 8.5 amps = 95.2 WATTS
Fuse Rating:	
355(001 thru -004 & -007 thru -010)	3 amp, 250 VAC, 1/4 x 1 1/4, Type Slo-Blo
355(-012 thru -015)	0.8 amp, 250 VAC, 5 x 20 mm, Type Time Lag

1.5 Parts Replacement Ordering

If a replacement part is required, order the part directly from the factory as follows:

(1) Refer to Figure 1-3 to determine the location of the model number and serial number of the lighting system and record this data.

(2) Refer to the Parts List to determine the item numbers of the parts, part numbers of the parts, descriptions of the parts, and quantities of parts needed and record this data (Refer to para 6.1).

NOTE
Ask the Purchasing Department of the company that owns the lighting system for this information. Otherwise, this information may be obtained from the dealer that sold the lighting system.

(3) Determine the installation date of the lighting system and record this data.

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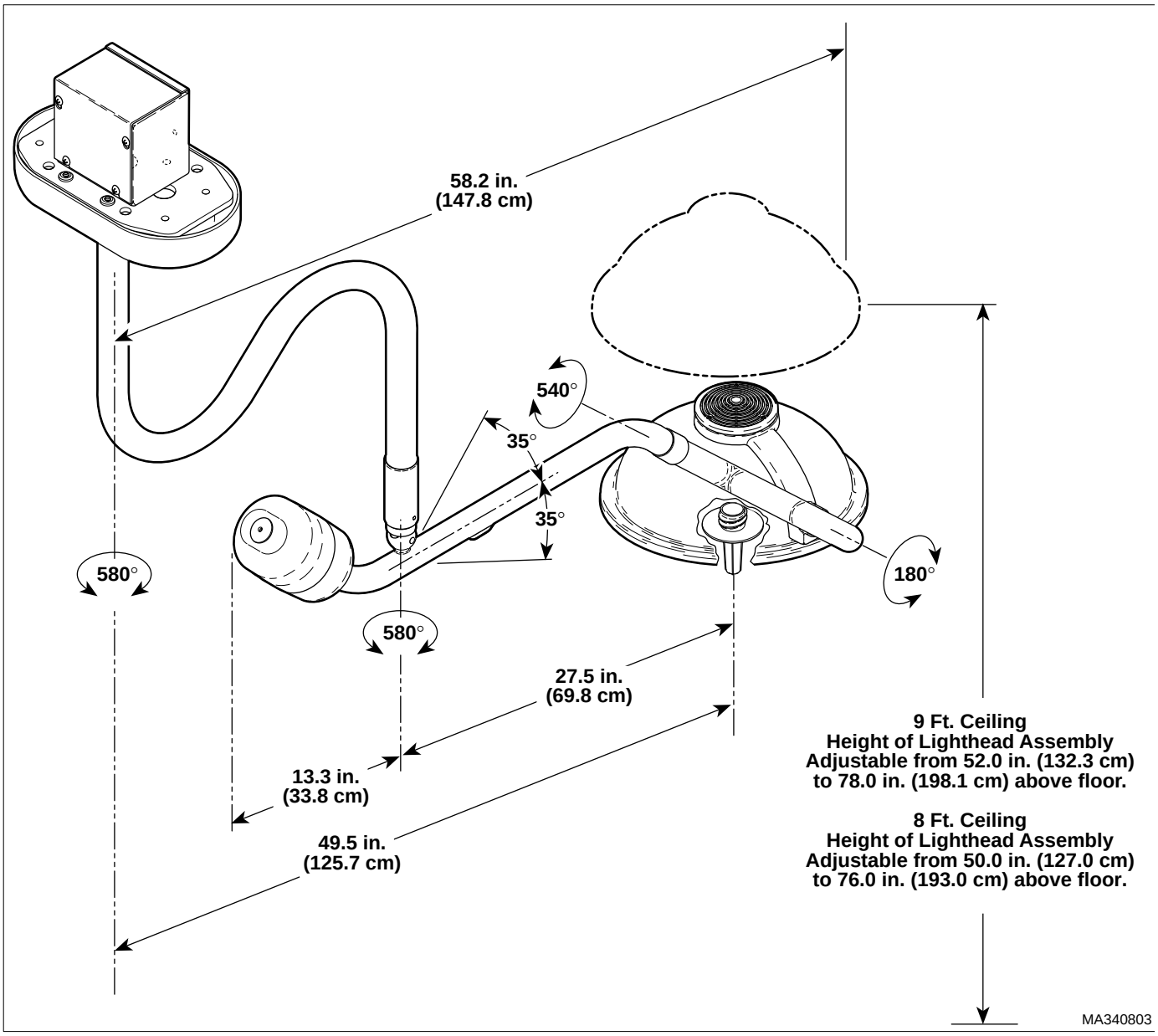

Figure 1-2. Dimensions

(4) Call Midmark with the recorded information and ask for the Medical Products Technical Services Department. See back cover of this manual for the phone number or use the Fax Order Form (See page 7-2 for Fax Order Form).

1.6 Special Tools

Table 1-2 lists all of the special tools needed to repair the lighting system, how to obtain the special tools, and the purpose of each special tool.

Table 1-2. Special Tool List

Description of Special Tool	Manufacturer's Name / Address / Phone	Manufacturer's Part Number	Purpose of Special Tool
Multimeter	Commercially Available	Any Type	Used to perform continuity and voltage checks.
Torque Wrench	Commercially Available	Any Type	Used to tighten nuts or screws to specified values.

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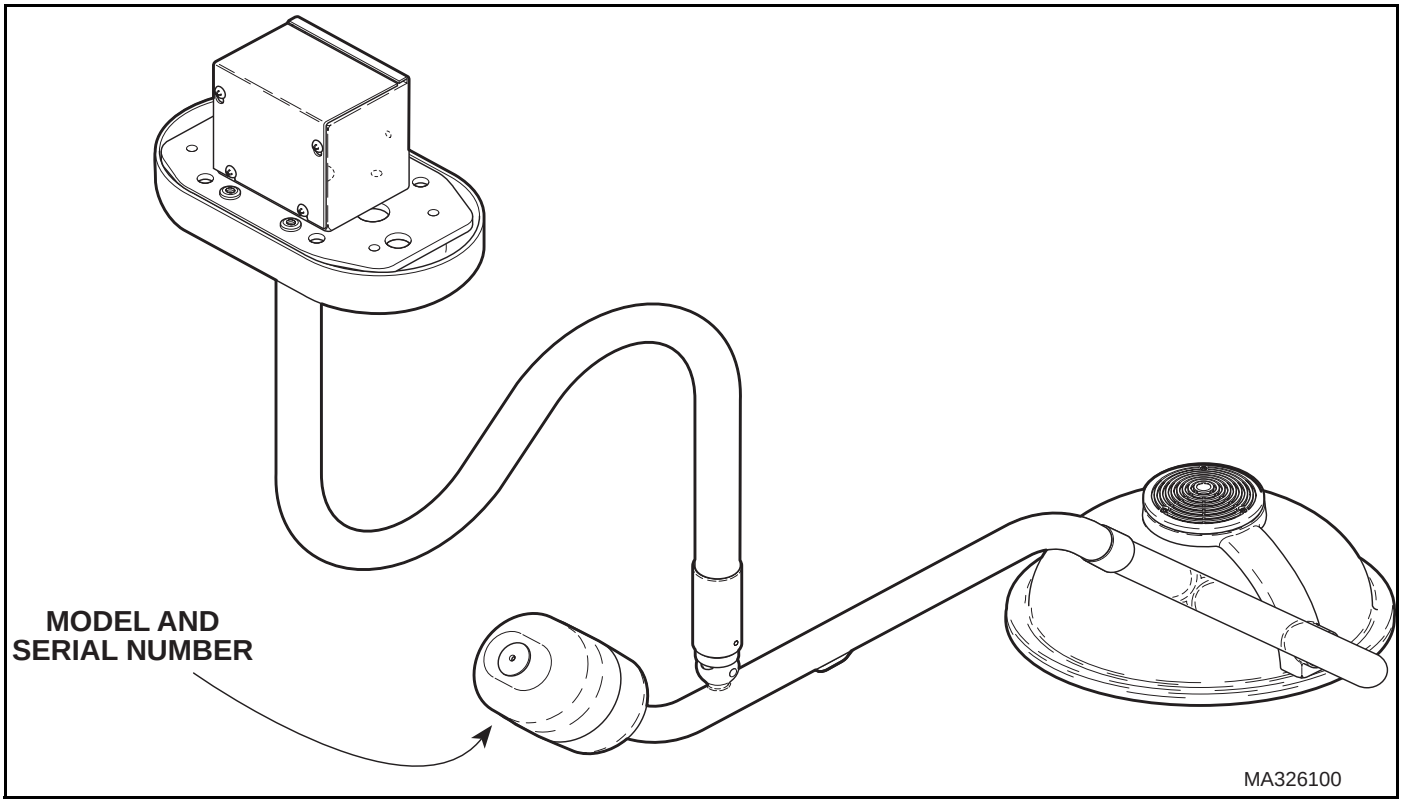

Figure 1-3. Model Number / Serial Number Location

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SECTION II
TESTING AND TROUBLESHOOTING

2.1 Operational Test (See Figure 2-1)

In order to effectively diagnose a malfunction of the 355 Lighting System, it may be necessary to perform an operational test as follows:

WARNING
Refer to the Operator Manual for complete instructions on operating the lighting system. Failure to do so could result in personal injury.

NOTE
The Operational Test, for the most part, only describes what should happen when the lighting system is operated. If the lighting system does something other than described, a problem has been discovered. Refer to the Troubleshooting Guide to determine the cause of the problem and its correction.

(1) Turn the ON / STANDBY switch (A, Figure 2-1) to ON.

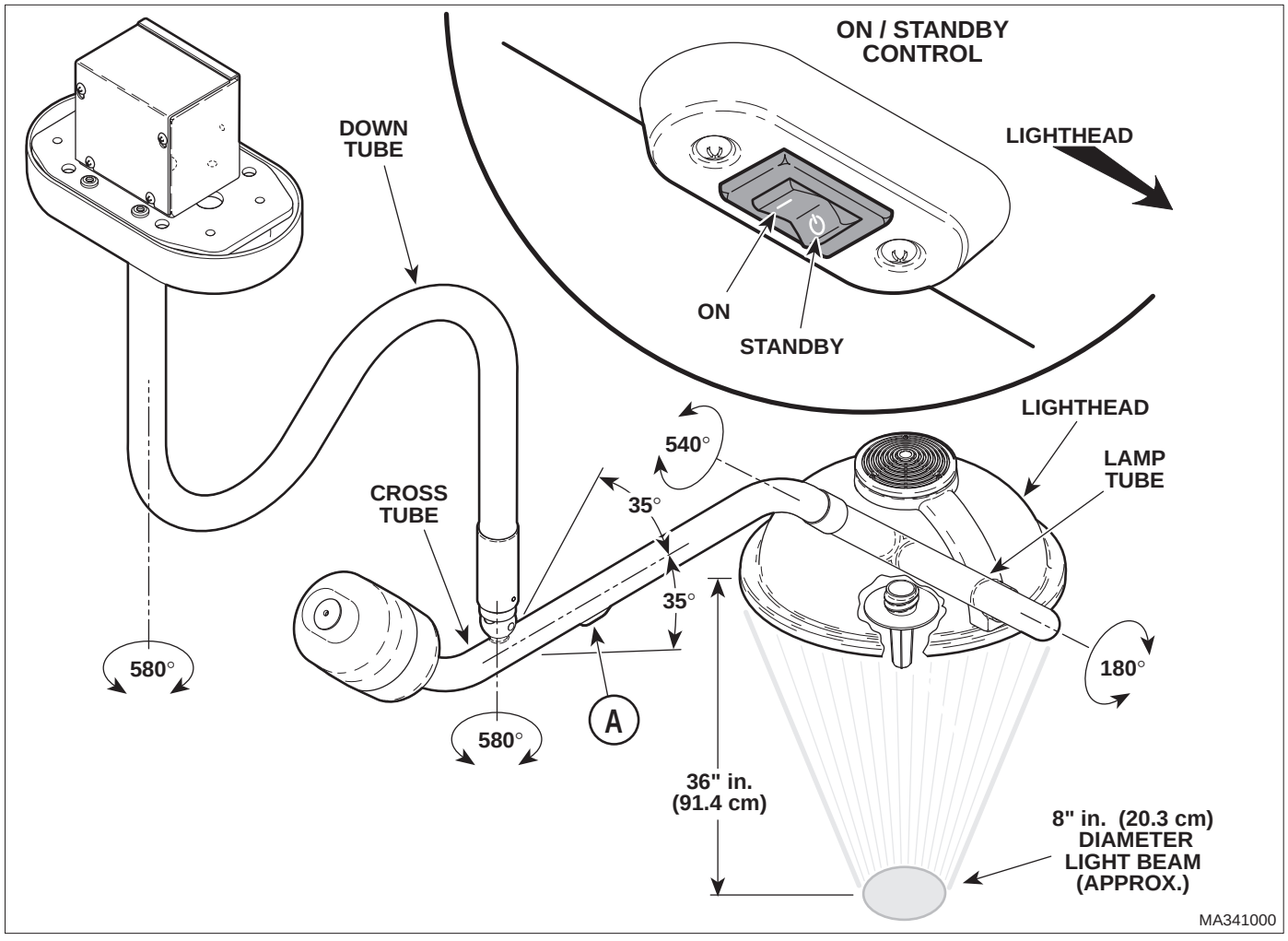

Figure 2-1. Operational Test

(2) ***Observe.*** The lighthead should illuminate.

(3) Position the lighthead 36 in. (91.4 cm) from the table (or wall) and aim the light beam at the table (or wall).

(4) ***Observe.*** There should be an evenly distributed circular pattern of bright light, approximately 8 in. (20.3 cm) in diameter, on the table (or wall) surface.

(5) Rotate the lighthead, lamp tube, and cross tube through their range of motions as shown on the illustration (See Figure 2-1). Release the lighthead and observe it at all different positions.

(6) ***Observe.*** The lighthead should be able to be positioned easily through its entire range of motion. Also, the light should not flicker intermittently when the lighthead is being positioned.

(7) Turn the ON / STANDBY switch to STANDBY.

2.2 Troubleshooting Procedures

Table 2-1 is a Troubleshooting Guide which is used to determine the cause of the malfunction.

Table 2-1. Troubleshooting Guide

Problem	Symptom	Probable Cause	Check	Correction
Lighthead will not illuminate.	Lighthead will not illuminate even though ON / STANDBY switch is turned to ON.	Halogen bulb is burned out or has not been installed.	Replace suspect halogen bulb with known working halogen bulb.	Replace halogen bulb. Refer to para 4.8.
		Facility circuit breaker providing power to unit is tripped.	Check to see if facility circuit breaker for unit is tripped.	If facility circuit breaker is tripped, determine what caused the circuit breaker to trip, correct the problem, and then reset / replace the circuit breaker.
		Line fuse (located in junction box) is blown.	Perform continuity check on line fuse.	Replace line fuse. Refer to para 4.2.
		Fuse holder is malfunctioning.	Perform continuity check on fuse holder.	Replace fuse holder. Refer to para 4.5.
		Bulb socket is corroded resulting in bad connection.	Clean bulb socket or replace suspect bulb socket with known working bulb socket.	Replace bulb socket. Refer to para 4.8.
		ON / STANDBY switch is malfunctioning.	Perform continuity check on ON / STANDBY switch.	Replace ON / STANDBY switch. Refer to para 4.6.
		Transformer is malfunctioning.	Check for 12.27 +/- 0.37 VAC across output leads of transformer when the ON / STANDBY switch is ON.	If 12.27 +/- 0.37 VAC is not present when ON / STANDBY switch is ON, replace transformer. Refer to para 4.3.
		Wiring is torn, broken, or disconnected somewhere within the arm assemblies.	Perform a continuity check on blue and brown wiring running from transformer to lighthead.	Replace or repair any torn, broken, or disconnected wiring.
	Lighthead will not illuminate or flashes intermittently when lighthead or arm assemblies are moved.	Wiring is torn, broken, or disconnected somewhere within the arm assemblies.	Perform a continuity check on blue and brown wiring running from transformer to lighthead.	Replace or repair any torn, broken, or disconnected wiring.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Arm assembly(ies) or lighthead does not rotate freely or drifts when released in desired position.	Down tube does not rotate or drifts when released in desired position.	Improper installation of ceiling plate (deflects too much or is not level).	Check for excessive flexing of ceiling support structure and / or check if ceiling plate is level.	Support ceiling structure as necessary to prevent flexing. If ceiling plate is not level, readjust until level.
	Cross tube rotates (at ball pivot joint) too stiffly or drifts when released in desired position.	Cross tube counterbalance needs to be adjusted.	Remove all tension from the ball pivot joint and observe to see if the cross tube counterbalances correctly.	Perform the cross tube counterbalance adjustment. Refer to para 4.10. Then, perform the ball pivot joint tension adjustment. Refer to para 4.11.
		Ball pivot joint tension needs to be adjusted.	Check ball pivot joint for looseness or stiffness.	Perform the cross tube counterbalance adjustment. Refer to para 4.10. Then, perform the ball pivot joint tension adjustment. Refer to para 4.11.
	Lamp tube does not rotate freely (at cross tube) or drifts when released in desired position.	Lamp tube brake tension needs to be adjusted.	Check for looseness or stiffness in joint.	Adjust the brake tension of the lamp tube. Refer to para 4.13.
	Lighthead does not rotate freely (at lamp tube) or drifts when released in desired position.	Lighthead brake tension needs to be adjusted.	Check for looseness or stiffness in joint.	Adjust the brake tension of the lighthead. Refer to para 4.14.
Arm assemblies can be rotated farther than specified.	Cross tube can be rotated more than 580° in one direction.	Ball pivot stop is broken.	Check for broken ball pivot stop.	Replace ball pivot stop. Refer to para 4.12.
	Lamp tube can be rotated more than 540° in one direction.	Lamp tube pivot stop is broken.	Check for broken lamp tube pivot stop.	Replace lamp tube pivot stop. Refer to para 4.17.
	Down tube can be rotated more than 580° in one direction.	Main pivot stop is broken.	Check for broken pivot stop.	Replace main pivot stop. Refer to para 4.16.
	Lighthead can be rotated more than 180° in one direction.	Lighthead pivot bearing stop is broken.	Check for broken lighthead pivot bearing.	Replace lighthead pivot bearing stop. Refer to para 4.15.
Lighthead will not operate properly.	Lighthead assembly illuminates, but not at the correct intensity.	Halogen bulb not illuminating at proper intensity.	Replace suspect halogen bulb with known working halogen bulb.	Replace halogen bulb. Refer to para 4.8.
		Wrong input tap is being used on transformer or facility voltage level has changed since lighting system was installed.	Check to see if correct transformer input tap is being used.	Select the proper transformer input tap based on the facility voltage available. Refer to para 4.4.
		Transformer is malfunctioning.	Replace suspect transformer with known working transformer.	Replace transformer. Refer to para 4.3.
		Bulb socket corroded resulting in bad connection or high resistance.	Clean bulb socket or replace suspect bulb socket with known working bulb socket.	Replace bulb socket. Refer to para 4.8.
		I.R. filter is clouded or dirty.	Clean I.R. filter.	Clean I.R. filter. Refer to para 4.9.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
		Faceplate assembly is clouded or dirty.	Clean faceplate assembly.	Clean faceplate assembly. Refer to para 4.9.
		Components of lighthead have been damaged / abused to the point that the lighthead is no longer in tolerance.	—	Return lighthead to Midmark for repair. Call 1-800-MIDMARK and ask for Medical Products Technical Service.

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SECTION III
SCHEDULED MAINTENANCE

3.1 Scheduled Maintenance

Table 3-1 is a Scheduled Maintenance Chart which lists the inspections and services that should be performed periodically on the 355 mobile lighting system. These inspections and services should be performed as often as indicated in the chart.

Table 3-1. Scheduled Maintenance

Interval	Inspection or Service	What to Do
Semi-annually	Obvious damage	Visually check condition of lighting system for obvious damage such as: cracks in components, missing components, dents in components, or any other visible damage which would cause the lighting system to be unsafe to operate or would compromise its performance. Repair lighting system as necessary.
	Fasteners / hardware	Check lighting system for missing or loose fasteners / hardware. Replace any missing hardware and tighten any loose hardware as necessary.
	Warning and instructional decals	Check for missing or illegible decals. Replace decals as necessary.
	Ceiling support	Check the rigididity of the ceiling support to which the ceiling plate is secured to for stability and sturdiness. Strengthen supports if necessary and tighten any loose bolts. Check to see if the ceiling plate is level. If not, level the ceiling plate.
	Lighthead assembly	**CAUTION:** Use only a Quarternary / Ammonia - base Germicide type cleaner to clean the faceplate plastic on the lighthead assembly. Other cleaners could pit or cloud the plastic. For the housing portion of the lighthead, use a soap and water solution to remove dirt and stains; for tougher stains, a standard household cleaner may be used. Refer to para 4.9.
	Transformer	Check for proper voltage output across the transformer output leads. Voltage output should be between 12.27 ±0.37 VAC. If not, select the proper input tap for the facility voltage available. Refer to para 4.4. If proper output voltage still cannot be achieved, replace the transformer. Refer to para 4.3.
	ON / STANDBY switch	Check the ON / STANDBY switch for proper function. Replace ON / STANDBY switch if necessary. Refer to para 4.6.
	Integrity of wiring and / or connections	Move each axis thru its full range of motion while observing the light beam for intermittent flickering or light beam going out completely. Repair wiring or wiring connections as necessary.
	Rotation of all axis	Check each axis to ensure ease of movement and positioning with no drifting after being released. Adjust tension of brakes if drifting is observed. Make sure each axis cannot rotate more than is specified in Figure 2-1. If so, replace pivot stops / pivot bearing stops as necessary.
	Ball pivot joint	Check that cross tube can rotate +35° to -35°. Check for drifting of cross tube after it is released in a position. If necessary, adjust the ball pivot joint tension. Refer to para 4.11.
	Bulb	Check for a missing or burned out bulb. Replace bulb if necessary. Refer to para 4.8.
	Bulb socket	Check bulb socket for corrosion or damage which would prevent posts of bulb from making good electrical contact with bulb socket. Clean or replace bulb socket. Refer to para 4.8.
	I.R. filter	Check to make sure I.R. filter is clear and is not cracked or pitted. Replace I.R. filter if necessary. **WARNING:** I.R. filter removes harmful light rays from light beam which can damage sensitive body tissue. Never operate the light without a functioning I.R. filter installed. Refer to para 4.9.
	Operational Test	Perform an Operational Test to determine if the exam light is operating within its specifications. Refer to para 2.1. Replace or adjust any malfunctioning components.

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SECTION IV
MAINTENANCE / SERVICE INSTRUCTIONS

4.1 Introduction

WARNING
Refer to the Operator Manual for complete instructions on operating the lighting system. Failure to do so could result in personal injury.

NOTE
Perform an operational test on the lighting system after the repair is completed to confirm the repair was properly made and that all malfunctions were repaired.

The following paragraphs contain removal, installation, repair, and adjustment procedures for the lighting system.

4.2 Typical Fuse Replacement

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Turn the ON / STANDBY switch to STANDBY.

(2) Remove four screws (1, Figure 4-1) and lower ceiling cover (2) from ceiling plate (3)

NOTE
The 220 VAC model will require a small flat bladed screwdriver to perform step 3.

(3) Simultaneously push in on fuse cap (4) and rotate 1/4 turn in the counterclockwise direction; then pull fuse cap from fuse holder (5).

(4) Pull fuse (6) out of fuse cap (4).

(5) Inspect fuse for any indication it has been blown. Perform continuity check on fuse. Discard fuse.

B. Installation

(1) Insert one end of new fuse (6) into the fuse cap (4).

(2) Simultaneously push fuse cap (4) into fuse holder (5) and rotate it 1/4 turn in the clockwise direction to secure it.

(3) Install ceiling cover (2) on ceiling plate (3) and secure with four screws (1).

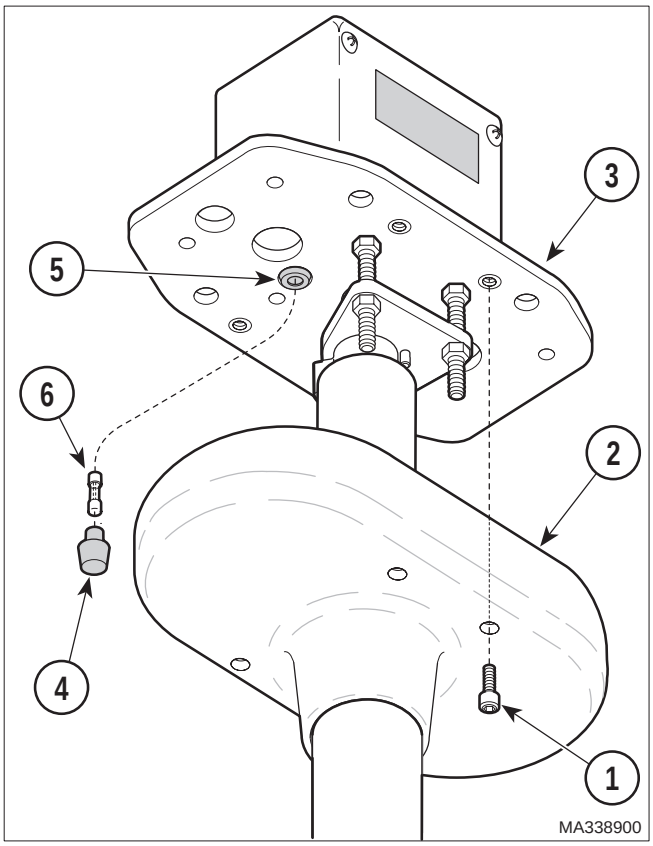

Figure 4-1. Fuse Replacement

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4.3 Typical Transformer Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Turn off facility power breaker so there is no power in facility wiring.

NOTE
The following procedure is written for units with easy access thru ceiling to junction box. If your unit does not have easy access to junction box, removal of down tube and junction box may be necessary first.

(2) Loosen four screws (1, Figure 4-2); then remove junction box cover (2) from junction box (3) by lifting up and then outward.

(3) Disconnect wire (4) from terminal of fuse holder (5).

NOTE
Only one of the transformer input wires are used (which one is used depends on facility input voltage). The following step applies to the input wire being used.

(4) Remove wire nut (6); then tag and disconnect yellow, orange, or red transformer input wire (7) from facility white “neutral” wire (8).

(5) Remove wire nuts (9) from remaining two input wires (7).

(6) Pull three wires (7) and wire (4) out thru snap bushing (10).

(7) Remove wire nuts (1, Figure 4-3); then tag and disconnect two wires (2) from two transformer output wires (3).

(8) Remove two nuts (4), lockwashers (5), screws (6), and transformer (7) from junction box (8).

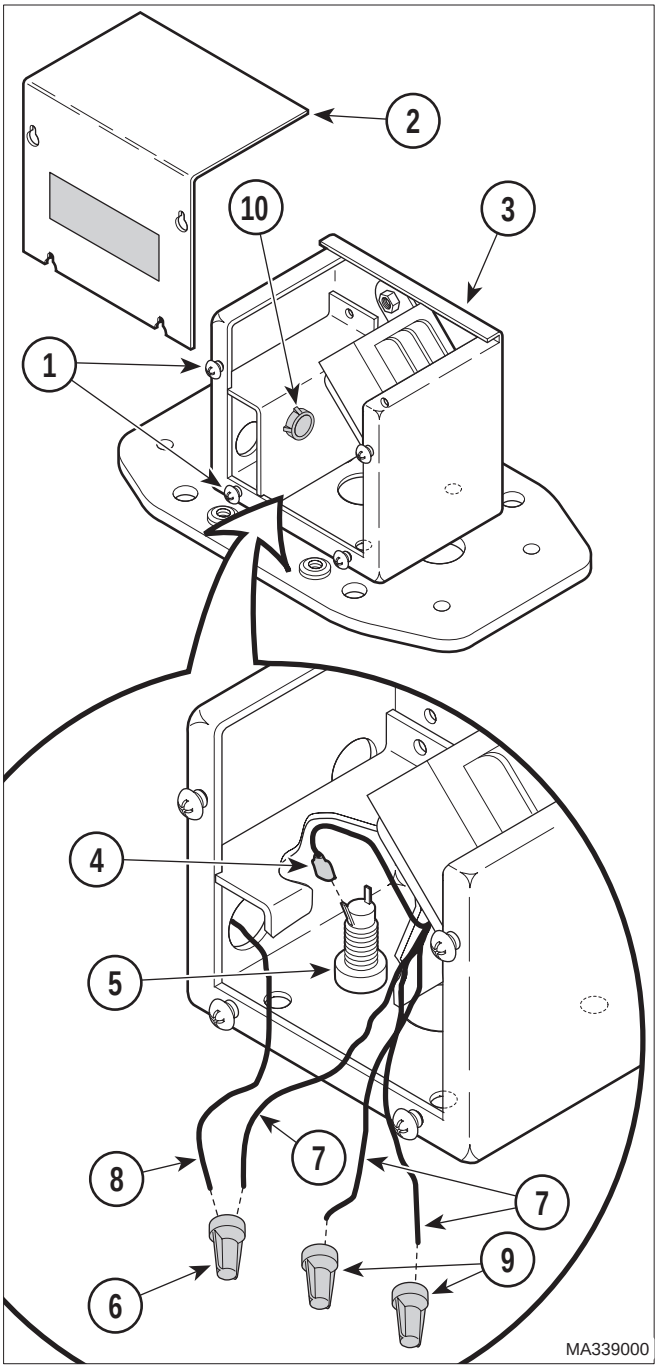

Figure 4-2. Transformer Access

B. Installation

(1) Connect two transformer output wires (3, Figure 4-3) to two wires (2) (wires exiting from down tube) with two wire nuts (1). Secure wire nuts in place with electrical tape.

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(2) Install transformer (7) on junction box (8) and secure with two screws (6), lockwashers (5), and nuts (4).

(3) Feed one wire (4, Figure 4-2) and three wires (7) thru snap bushing (10).

NOTE
Make sure the same transformer input wire that was used on the old transformer is used on the new transformer. If necessary, perform transformer input tap selection (Refer to para 4.4).

(4) Connect transformer input wire (7) (being used) to facility white "neutral" wire (8) with large wire nut (6). Secure wire nut with electrical tape.

(5) Install small wire nuts (9) on the two remaining (unused) transformer input wires (7). Secure wire nuts with electrical tape.

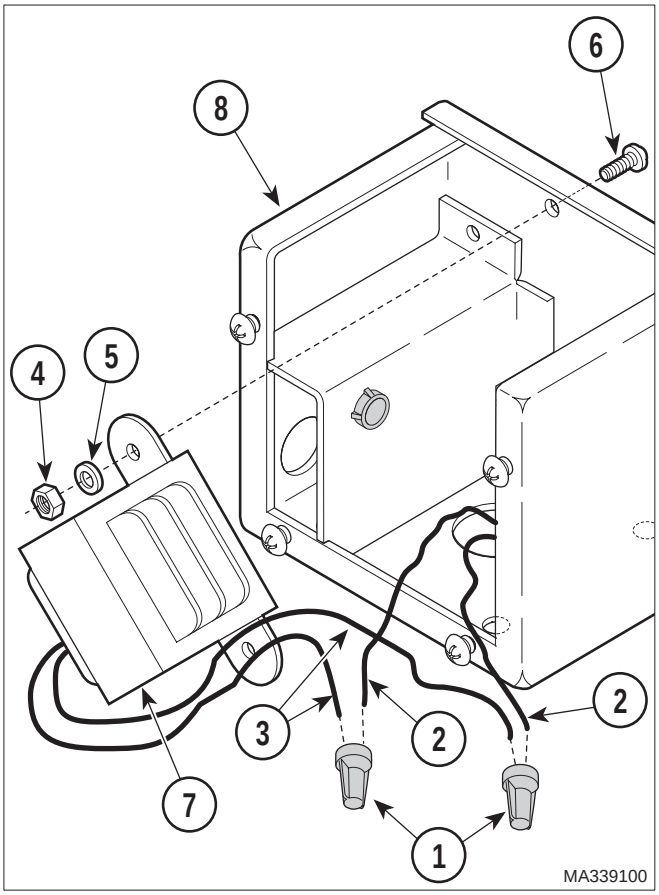

Figure 4-3. Transformer Removal / Installation

(6) Connect wire (4) to terminal of fuse holder (5).

(7) Install junction box cover (2) on junction box (3) and secure by tightening four screws (1).

(8) Connect electrical power to unit.

4.4 Transformer Input Tap Selection

A. Removal

WARNING
Make sure facility supplied wiring is turned off for the following steps. Failure to do so could result in electrical shock causing serious personal injury or death.

(1) Turn off facility power breaker so there is no power in facility wiring to unit.

NOTE
The following procedure is written for units with easy access thru ceiling to junction box. If your unit does not have easy access to junction box, removal of down tube and then junction box may be necessary first.

(2) Loosen four screws (1, Figure 4-4); then remove junction box cover (2) from junction box (3) by lifting up and then outward.

(3) Remove wire nut (4); then tag and disconnect black "hot" wire (5) from fuse wire (6).

(4) Remove wire nut (7); then tag and disconnect white "neutral" wire (8) from yellow, orange, or red transformer input wire (9).

WARNING
Make sure facility supplied wiring is not shorted to junction box and do not touch wires during steps 5 and 6. Failure to do so could result in electrical shock causing serious personal injury or death.

(5) Turn on facility power breaker so there is power in facility wiring.

(6) Using a multimeter, measure the input voltage between black "hot" wire (5) and white "neutral" wire (8) of facility wiring. Record this voltage.

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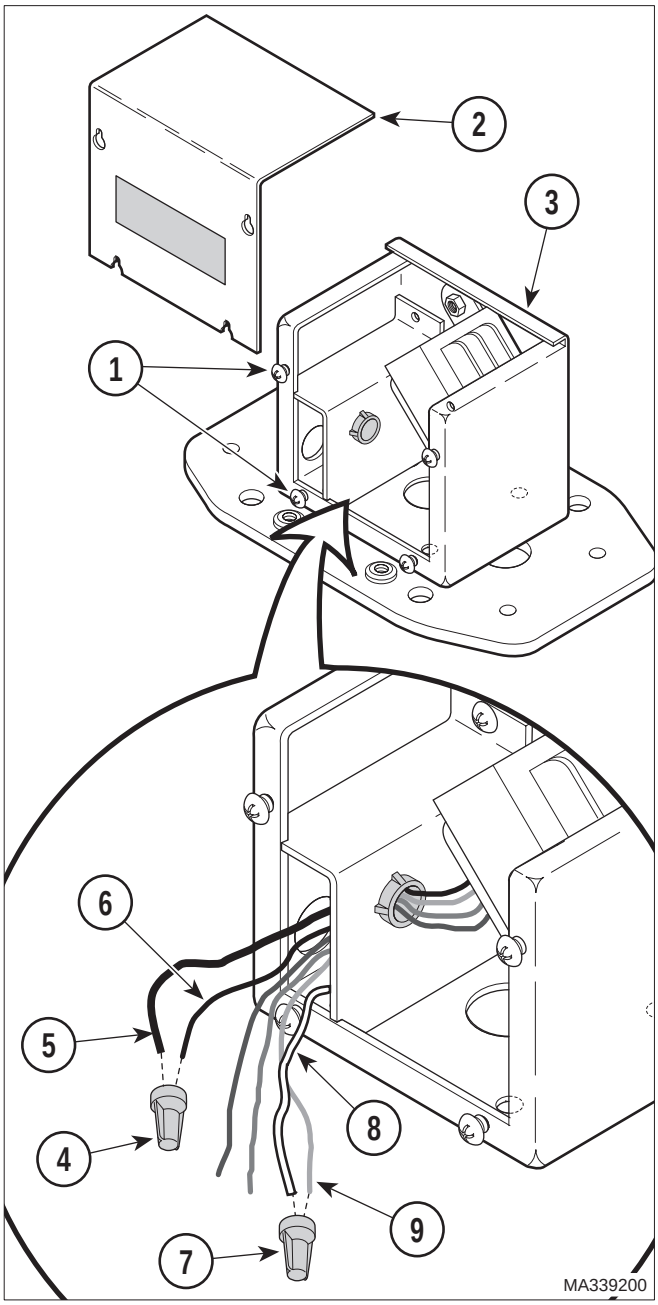

Figure 4-4. Transformer Input Tap Selection

(7) Turn off facility power breaker so there is no power in facility wiring to unit.

WARNING
Make sure facility supplied wiring is turned off for the following steps. Failure to do so could result in electrical shock causing serious personal injury or death.

NOTE
Steps 8 thru 11 refer to 120 VAC units only. For 220 VAC units go to step 12.

NOTE
There are different levels of voltage at different facilities, however, the light is designed to work best at 120 VAC. The transformer has three input taps which can be used to adjust the transformer output based on what the facility input voltage actually is; whether it is too high, too low, or within tolerance. The following step helps select the correct input tap.

(8) If voltage measured in step 6 was 117.0 VAC or lower, connect the white “neutral” wire (8) of facility wiring to the yellow transformer input lead (9). Secure wires with large wire nut (7); then secure wire nut with electrical tape. If voltage measured in step 6 was between 117.1 and 123.0 VAC, connect the white “neutral” wire (8) of facility wiring to the orange transformer input lead (9). Secure with large wire nut (7); then secure wire nut with electrical tape. If voltage measured in step 6 was 123.1 VAC or higher, connect the white “neutral” wire (8) of facility wiring to the red transformer input lead (7). Secure wires with large wire nut (7); then secure wire nut with electrical tape.

(9) Connect the black “hot” wire (5) of facility wiring to fuse wire (6). Secure wires with large wire nut (4). Secure wire nut with electrical tape.

(10) Install junction box cover (2) on junction box (3) and secure by tightening four screws (1).

(11) Turn on facility power breaker so there is power to unit.

NOTE
Steps 12 thru 15 refer to 220 VAC units only.

NOTE
There are different levels of voltage at different facilities, however, the light is designed to work best at 220 VAC. The transformer has three input taps which can be used to adjust the transformer output based on what the facility input voltage actually is; whether it is too high, too low, or within tolerance. The following step helps select the correct input tap.

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(12) If the voltage measured in step 6 was 225.0 VAC or lower, connect the white “neutral” wire (8, Figure 4-4) of facility wiring to the yellow transformer input lead (9). Secure wires with large wire nut (7); then secure wire nut with electrical tape. If voltage measured in step 6 was between 225.1 and 235.0 VAC, connect the white “neutral” wire (8) of facility wiring to the orange transformer input lead (9). Secure wires with large wire nut (7); the secure wire nut with electrical tape. If the voltage measured in step 6 was 235.1 VAC or higher, connect the white “neutral” wire (8) of facility wiring to the red transformer input lead (9). Secure wires with large wire nut (7); then secure wire nut with electrical tape.

(13) Connect the black “hot” wire (5) of facility wiring to fuse wire (6). Secure wires with large wire nut (4). Secure wire nut with electrical tape.

(14) Install junction box cover (2) on junction box (3) and secure by tightening four screws (1).

(15) Turn on facility power breaker so there is power to unit.

4.5 Typical Fuse Holder Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Turn off facility power breaker so there is no power in facility wiring to unit.

(2) Remove four screws (1, Figure 4-5) and lower ceiling cover (2) from ceiling plate (3)

NOTE
The 220 VAC model will require a small flat bladed screwdriver to perform step 3.

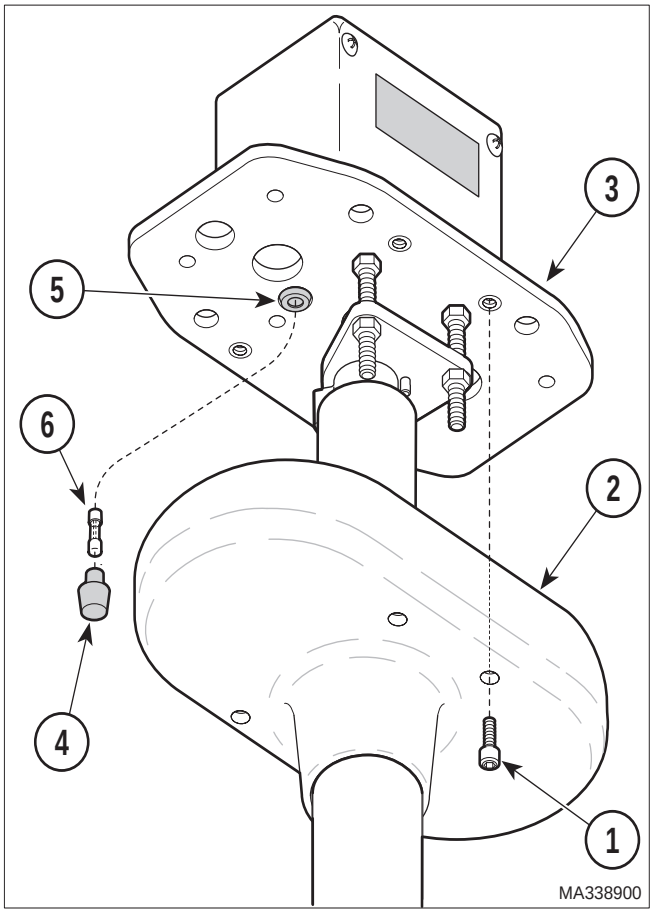

Figure 4-5. Ceiling Cover / Fuse Removal / Installation

(3) Simultaneously push in on fuse cap (4) and rotate it 1/4 turn in the clockwise direction; then pull fuse cap from fuse holder (5).

(4) Pull fuse (6) out of fuse cap (4).

NOTE
The following procedure is written for units with easy access thru ceiling to junction box. If your unit does not have easy access to junction box, removal of down tube and junction box may be necessary first.

(5) Loosen four screws (1, Figure 4-6); then remove junction box cover (2) from junction box (3) by lifting up and then outward.

(6) Remove two screws (4) and partially separate junction box divider (5) from junction box (3).

(7) Disconnect two wires (6) from terminal of fuse holder (7).

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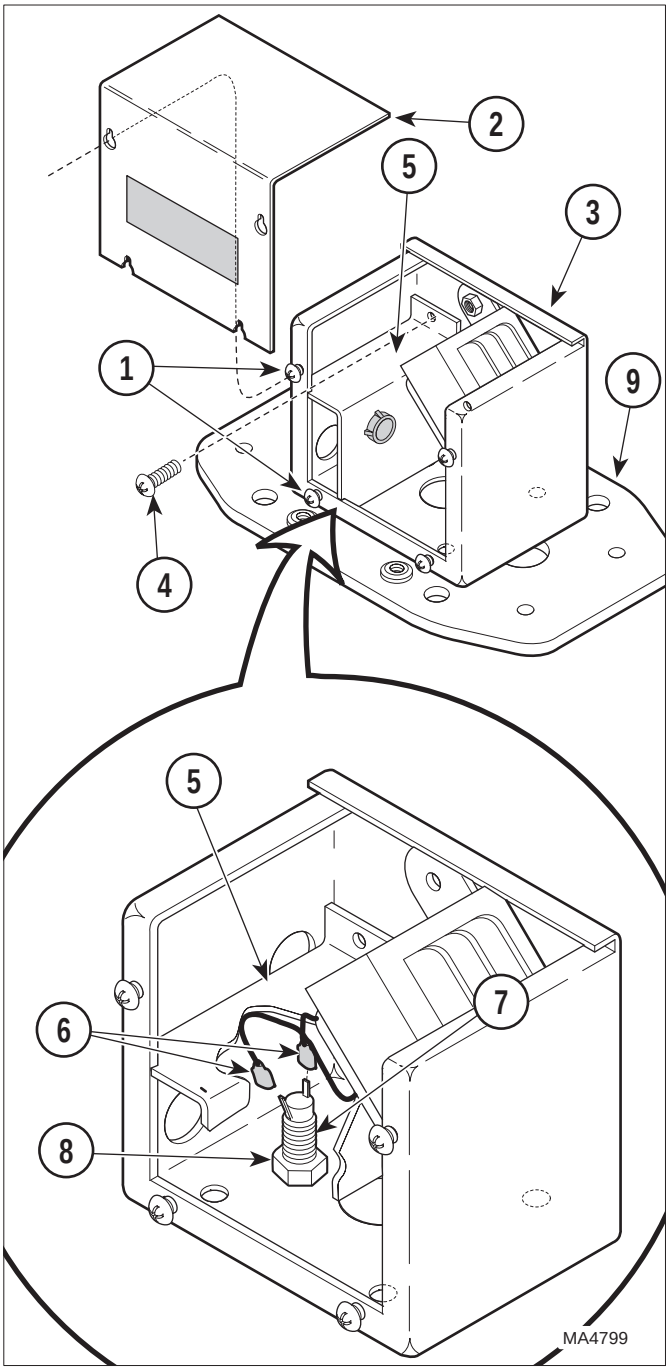

Figure 4-6. Fuse Holder Removal / Installation

(8) Remove nut (8) and push fuse holder (7) down thru ceiling plate (9).

B. Installation

(1) Push fuse holder (7) up thru ceiling plate (9) and secure with nut (8).

(2) Connect two wires (6) to terminals of fuse holder (7).

(3) Replace junction box divider (5) and secure with two screws (4).

(4) Install junction box cover (2) on junction box (3) and secure by tightening four screws (1).

(5) Insert one end of fuse (6, Figure 4-5) into fuse cap (4).

(6) Simultaneously push fuse cap (4) into fuse holder (5) and rotate it 1/4 turn in clockwise direction to secure it.

(7) Install ceiling cover (2) on ceiling plate (3) and secure with four screws (1).

(8) Turn on facility power breaker so there is power in facility wiring to unit.

4.6 ON / STANDBY Switch Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Remove two screws (1, Figure 4-7) and partially separate switch bezel (2) from cross tube weldment (3).

(3) Disconnect two wires (4) from terminals of ON / STANDBY switch (5).

(4) While simultaneously pressing on four locking tabs, push ON / STANDBY switch (5) out of switch bezel (2).

B. Installation

(1) Press ON / STANDBY switch (5) into switch bezel (2) until it pops into place.

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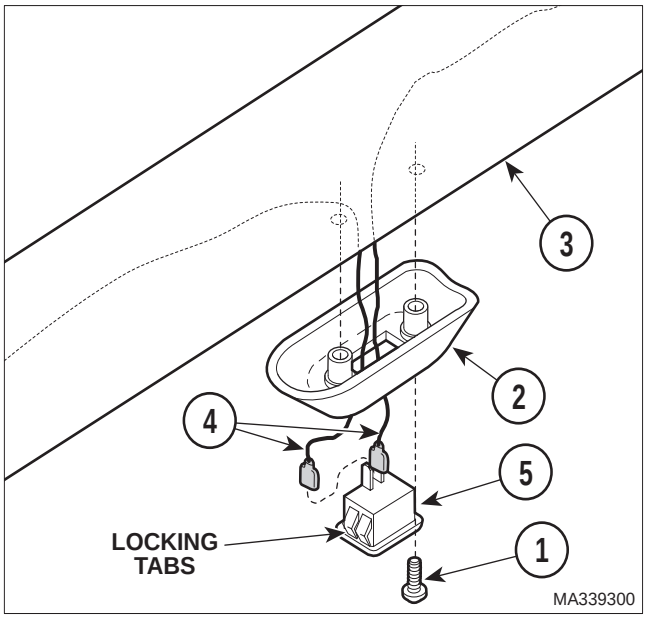

Figure 4-7. ON / STANDBY Switch Removal / Installation

(2) Position ON / STANDBY switch (5) so the ON label "I" is located toward the ball pivot.

(3) Connect two wires (4) to terminals of ON / STANDBY switch (5).

(4) Install switch bezel (2) on cross tube weldment (3) and secure with two screws (1).

(5) Connect electrical power to unit.

4.7 Lighthead Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Slide pivot sleeve (1, Figure 4-8) up out of way.

(3) Remove two screws (2) and separate lighthead (3) from lamp tube (4).

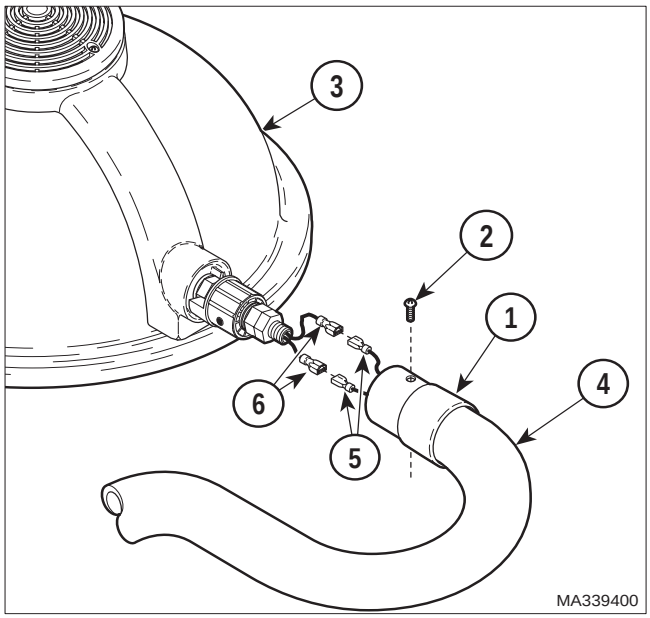

Figure 4-8. Lighthead Removal / Installation

(4) Disconnect two wires (5) from bulb socket wires (6). Remove lighthead (3).

B. Installation

(1) Position lighthead (3) near lamp tube (4); then connect two bulb socket wires (6) to wires (5).

WARNING
Make sure screws (2) are installed correctly. Failure to install screws correctly could allow lighthead to fall resulting in patient or staff injury.

(2) Install lighthead (3) on lamp tube (4) and secure with two screws (2).

(3) Slide pivot sleeve (1) down over joint. Position the pivot sleeve so that indentations inside pivot sleeve are over the screw heads.

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4.8 Bulb Socket Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

NOTE
If desired, you may replace the entire top cap assembly instead of replacing the bulb socket. If so, use this procedure as a guide.

(1) Disconnect electrical power to unit.

(2) Remove lighthead (Refer to para 4.7).

(3) Loosen three captive screws (1, Figure 4-9) and separate top cap (2) from support arm pivot (3).

CAUTION
Bulb may be HOT! Always allow bulb to cool for 4-5 minutes before attempting to remove.

NOTE
Halogen bulbs are sensitive to body oils. Be sure not to touch the glass portion during relamping or cleaning. Body oils create a hot spot on the bulb and may cause the bulb to burn out prematurely. If the glass portion of the bulb is handled, wipe with a clean, soft, lint free cloth. Wipe with alcohol and pat dry.

(4) Using a cotton glove or similar clean cloth, grasp the bulb (4) and pull to remove from bulb socket (5).

(5) Remove eight screws (1, Figure 4-10) and faceplate assembly (2) from reflector (3).

(6) Remove four nuts (4), lockwashers (5), screws (6), two screws (7), lockwashers (8), and then reflector (3) from support arm pivot (9).

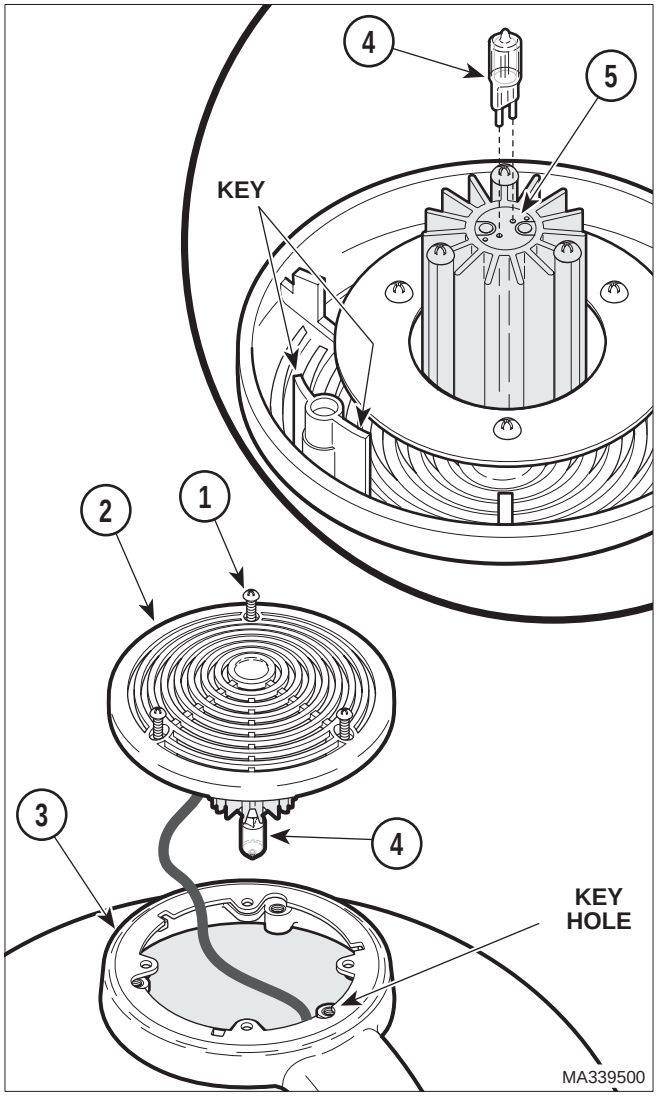

Figure 4-9. Bulb Removal / Installation

(7) Cut two butt splices (10) from bulb socket upper wires (11).

(8) Cut cable tie (1, Figure 4-11) securing bulb socket wires (2).

(9) Remove four screws (3), lockwashers (4), light block (5), spacers (6), and top cap (7) from heat sink (8).

(10) Remove three nuts (9), lockwashers (10), screws (11), lockwashers (12), spacers (13), and mounting plate (14) from heat sink (8).

(11) Remove two screws (15), lockwashers (16), and bulb socket (17) from heat sink (8).

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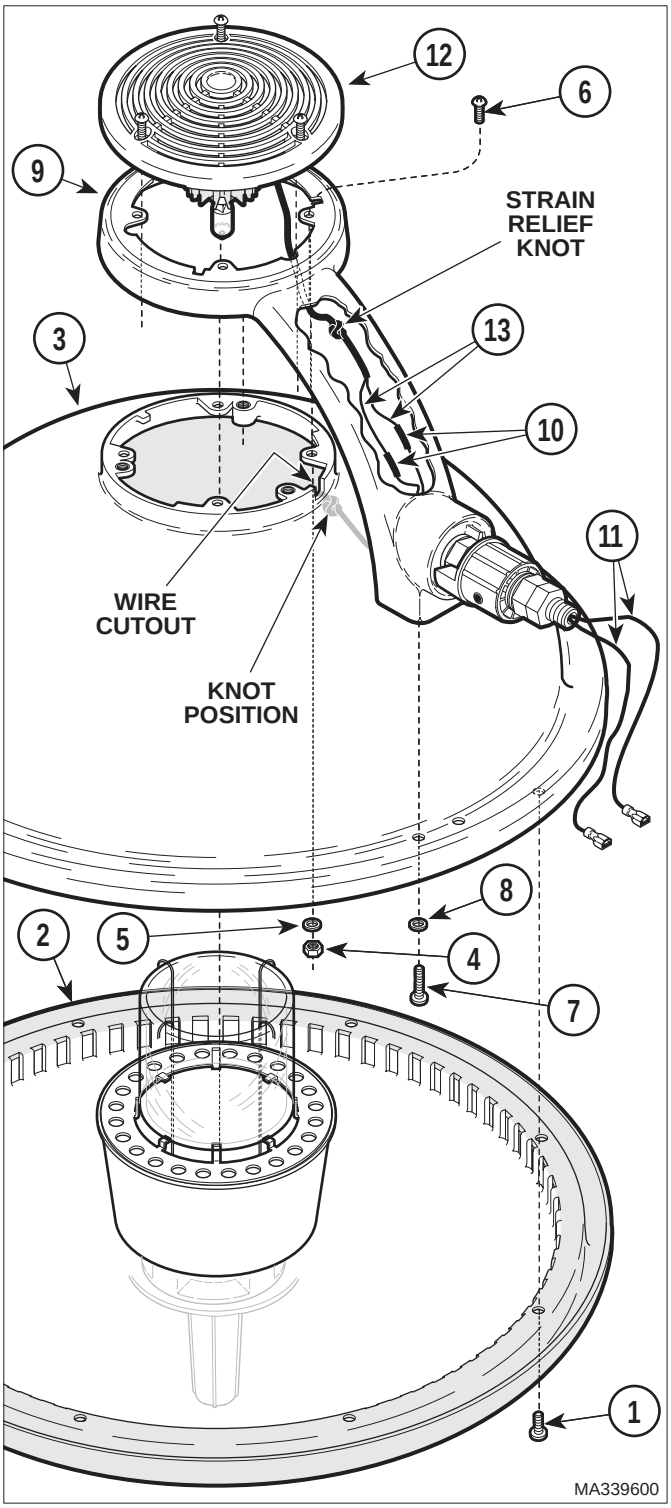

Figure 4-10. Support Arm Pivot Removal / Installation

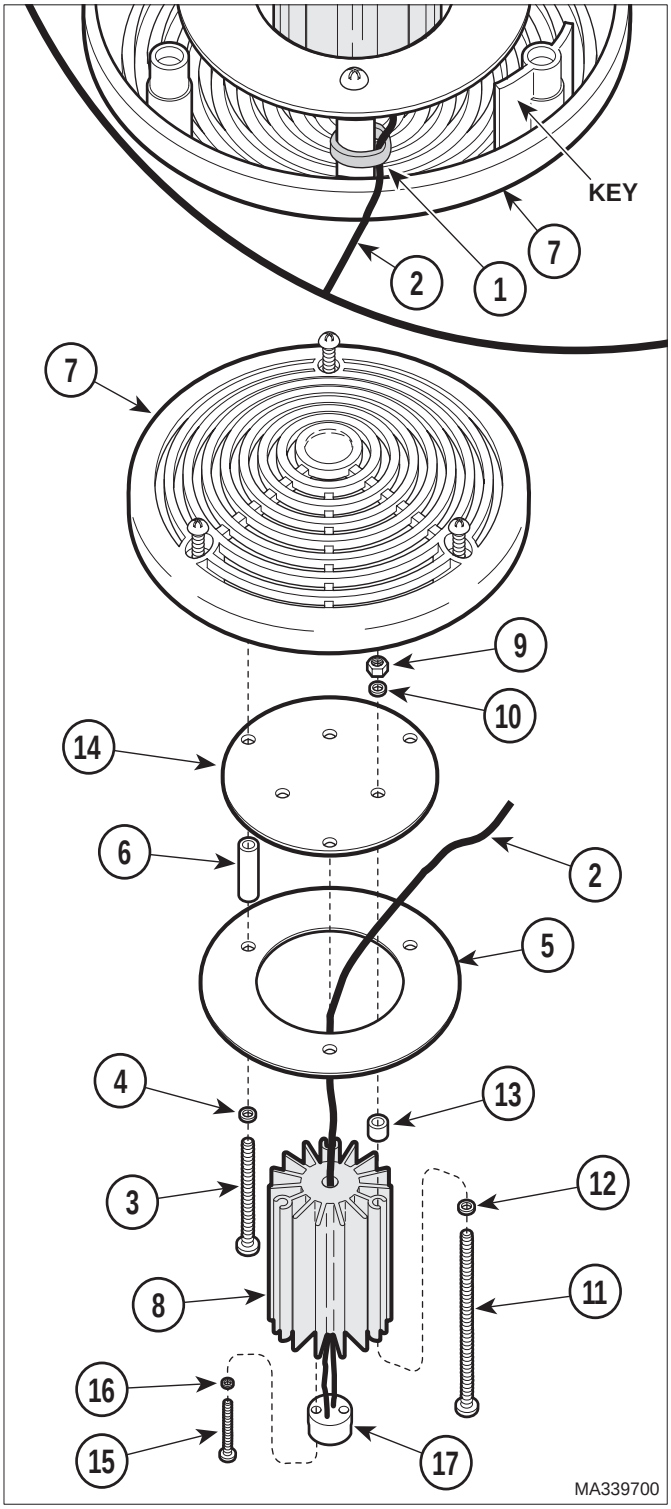

Figure 4-11. Support Arm Pivot Removal / Installation

B. Installation

(1) Feed two bulb socket wires (2, Figure 4-11) thru heat sink (8).

EQUIPMENT ALERT
Only tighten screws (15) as described in following step. Overtightening screws will cause bulb socket to crack.

(2) Install bulb socket (17) on heat sink (8) and secure with two lockwashers (16) and screws (15). Tighten screws to 35 to 50 in-oz. (0.24 to 0.35 N•m).

(3) Install mounting plate (14) on heat sink (8) and secure with three spacers (13), lockwashers (12), screws (11), lockwashers (10), and nuts (9).

NOTE
The relamp label should be installed so lettering is facing away from top cap.

(4) Install top cap (7) on mounting plate (14) and secure with four spacers (6), light block (5), lockwashers (4), and screws (3), making certain not to overtighten screws and crack top cap bosses.

EQUIPMENT ALERT
Use cable tie provided. This cable tie is especially designed to hold up under high temperatures. Failure to use proper cable tie could result in wire coming loose and contacting bulb.

(5) Secure bulb socket wires (2) to spacer adjacent to key of top cap (7) with cable tie (1).

(6) Tie a strain relief knot in bulb socket wires (13, Figure 4-10). Locate knot so there is 3.0 in. +/- 0.25 in. (7.6 +/- 0.3 cm) of wire length between the knot and cable tie.

(7) Strip 1/4 in. (6.35 mm) of insulation from each bulb socket jumper wire (11).

(8) Feed bulb socket jumper wires (11) thru support pivot arm (9).

(9) If not already done, strip 1/4 in. (6.35 mm) of insulation from each bulb socket wire (13).

(10) Feed bulb socket wires (13) thru top of support arm pivot (9).

(11) Connect bulb socket wires (13) to bulb socket jumper wires (11) with butt splices (10).

NOTE
Make sure bulb socket wires are routed into wire cut-out of reflector to prevent pinching / cutting of wires and that the strain relief knot of wiring is behind the wire cutout of the reflector.

(12) Install reflector (3) on support arm pivot (9) and secure with two lockwashers (8), screws (7), four screws (6), lockwashers (5), and nuts (4).

(13) Install faceplate assembly (2) on reflector (3) and secure with eight screws (1).

NOTE
Halogen bulbs are sensitive to body oils. Be sure not to touch the glass portion during relamping or cleaning. Body oils create a hot spot on the bulb and may cause the bulb to burn out prematurely. If the glass portion of the bulb is handled, wipe with a clean, soft, lint free cloth. Wipe with alcohol and pat dry.

(14) Using a cotton glove or other similar clean cloth, grasp bulb (4, Figure 9) and insert bulb into bulb socket (5). Push bulb down until glass base of bulb is approximately 1/16” (1.6 cm) from bulb socket.

(15) Align key of top cap (2) with key hole in support arm pivot (3). Then secure top cap (2) on support arm pivot (3) by tightening three captive screws (1), making sure not to overtighten screws and crack the top cap.

(16) Install lighthead (Refer to para 4.7).

(17) Connect electrical power to unit.

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4.9 Faceplate Assembly Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Remove eight screws (1, Figure 4-12) and faceplate assembly (2) from reflector (3).

(3) To clean inside of lighthead, spray with can of compressed air. Do not touch interior surface of reflector (4), I.R. filter (5), or clear surfaces of faceplate (2) with bare fingers.

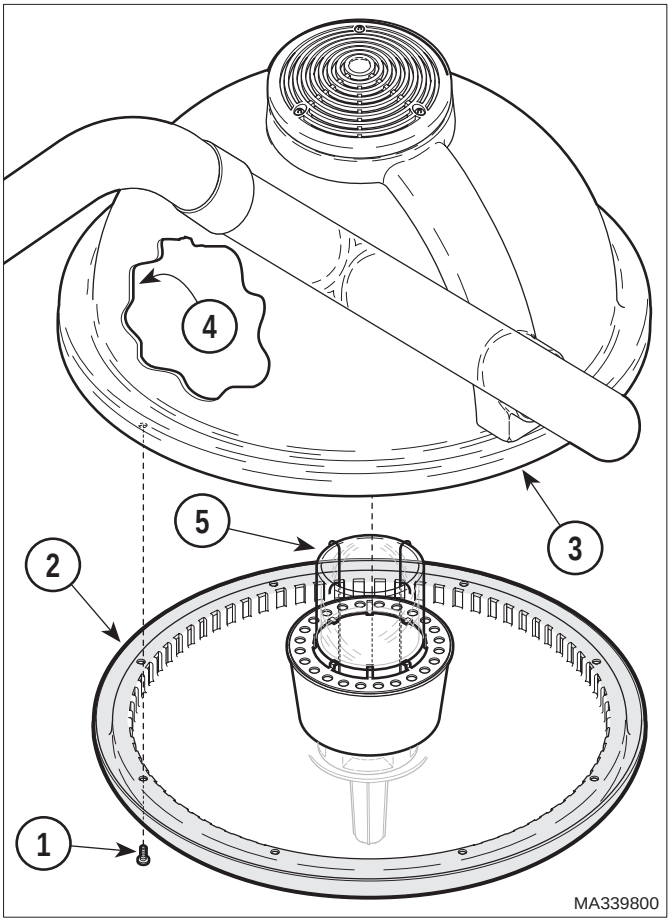

Figure 4-12. Faceplate Removal / Installation

B. Installation

WARNING
Make sure screws (1) are installed correctly. Failure to do so could allow the faceplate assembly to fall, striking and injuring a patient or staff member.

(1) Install faceplate assembly (2) on reflector (3) and secure with eight screws (1).

(2) Connect electrical power to unit.

4.10 Cross Tube Counterbalance Adjustment

A. Adjustment

(1) Remove screw (1, Figure 4-13) and slide ball pivot sleeve (2) up out of way.

(2) Rotate cross tube (3) until adjustment hole (4) appears in the adjustment window opening.

(3) Insert screwdriver into adjustment hole (4). Then, using screwdriver, rotate ball pivot cam (5) to assembly / disassembly setting. Remove screwdriver.

(4) Remove screw (1, Figure 4-14) and housing cap (2) from ballast housing (3).

(5) Adjust screw (4) until cross tube balances in a horizontal position.

(6) Install housing cap (2) on ballast housing (3) and secure with screw (1).

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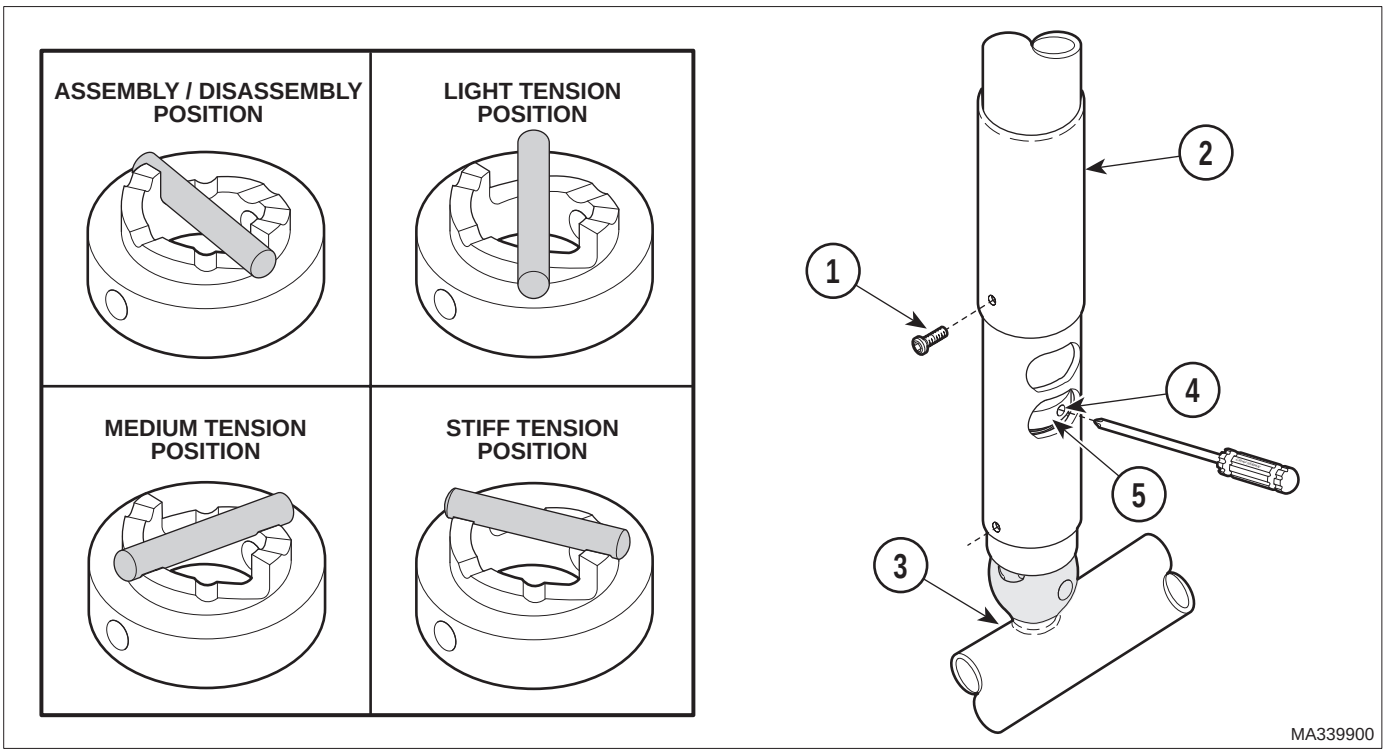

Figure 4-13. Tension Release

(7) Insert screwdriver into adjustment hole (4, Figure 4-13). Then, using the screwdriver, rotate ball pivot cam (5) to the light, medium, or stiff setting as desired by the operator(s). Remove screwdriver.

NOTE

One way to determine if cross tube is balanced properly is to raise the cross tube above horizontal, release it, and observe where it stops. Then, lower the cross tube below horizontal plane, release it, and observe where it stops. The cross tube should return to the horizontal position and remain there; if it does, the cross tube counterbalance is adjusted properly. Turning screw (4) in clockwise direction will raise lighthead end of cross tube. Turning screw (4) in counterclockwise direction will lower the lighthead end of cross tube.

(8) Slide ball pivot sleeve (2) down into position and secure with screw (1).

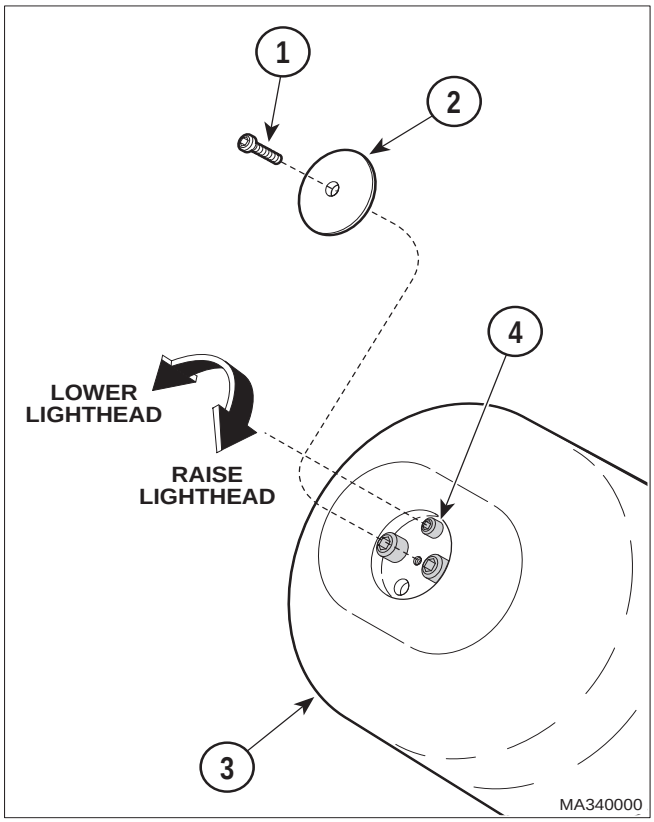

Figure 4-14. Cross Tube Counterbalance Adjustment

4.11 Ball Pivot Joint Tension Adjustment

A. Adjustment

(1) Remove screw (1, Figure 4-15) and slide ball pivot sleeve (2) up out of way.

(2) Rotate cross tube (3) until adjustment hole (4) appears in adjustment window opening.

NOTE
There are three settings to which the ball pivot cam (5) can be set: light tension, medium tension, or stiff tension (see Figure 4-15). These settings may be changed according to the operator's preference.

(3) Insert screwdriver into adjustment hole (4). Then, using screwdriver, rotate ball pivot cam (5) to the desired tension setting.

(4) Remove screwdriver and move cross tube (3) about the ball pivot joint in a circular motion and up and down motion to ensure the setting is the one desired. Move cross tube (3) to a non-horizontal position and release it. The cross tube should not drift in any direction. If it does, a higher tension setting is required.

(5) Repeat steps 3 and 4 until the desired tension adjustment is achieved with no drifting of cross tube. If a satisfactory tension adjustment cannot be achieved, perform cross tube counterbalance adjustment procedure (refer to para 4.10) and then repeat ball pivot joint tension adjustment procedure.

(6) Slide ball pivot sleeve (2) down into position and secure with screw (1).

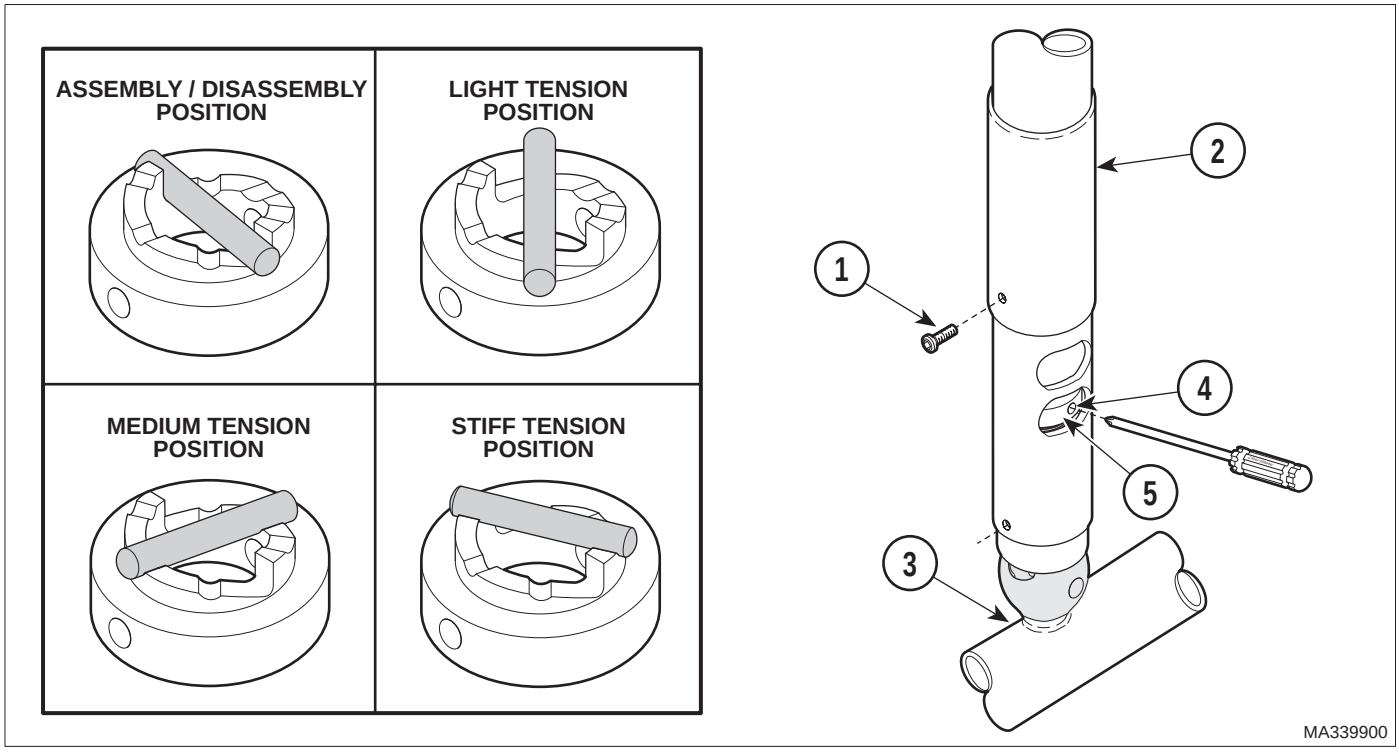

Figure 4-15. Ball Pivot Joint Tension Adjustment

4.12 Ball Pivot and / or Ball Pivot Stop Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Remove screw (1, Figure 4-16) and slide ball pivot sleeve (2) up out of way.

(3) Disconnect two wires (3) from two wires (4).

CAUTION
The cross tube / lighthead is very heavy. You may need to use an assistant. Use proper lifting techniques to prevent injury or back strain.

(4) While supporting cross tube / lighthead (5), remove two screws (6) and then cross tube / lighthead from down tube (7).

NOTE
Ball pivot joint will not have any tension on it at all if ball pivot cam is in proper position.

(5) Insert a screwdriver or punch into adjustment hole (8). Then, using the screwdriver, rotate ball pivot cam to "Assembly / Disassembly" position.

(6) Cut quick disconnect terminals (9) from two wires (3), making sure to cut as close to terminals as possible to preserve wire length.

(7) Using a hammer and punch, drive out groove pin (10) and remove ball pivot assembly (11) from cross tube (5).

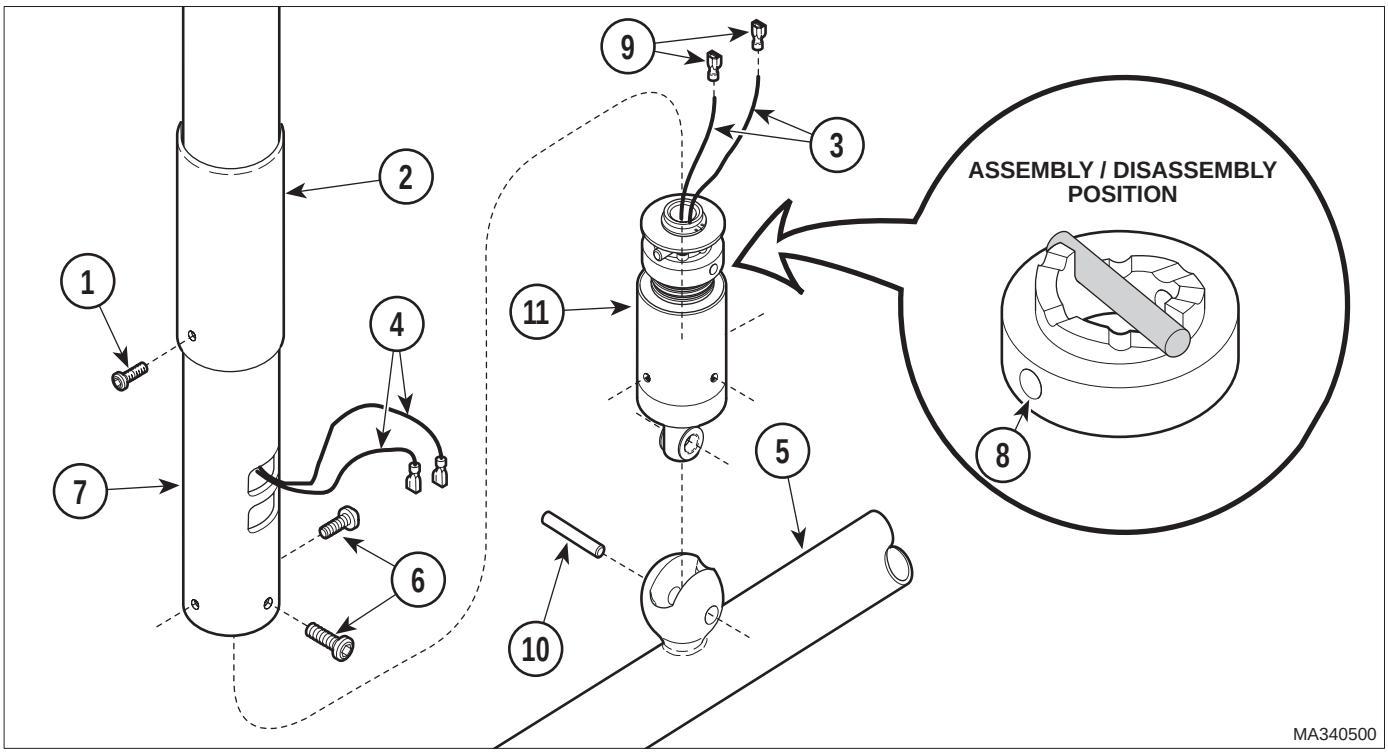

Figure 4-16. Ball Pivot Removal / Installation

B. Disassembly

(1) Using retaining ring pliers, remove retaining ring (1, Figure 4-17) and washer (2) from ball pivot shaft (3).

NOTE
There are serrations on one end of groove pin. Drive groove pin so serrations do not go thru ball pivot shaft.

(2) Using a hammer and punch, drive groove pin (4) out of ball pivot shaft (3).

NOTE
When removing, check ball pivot bearing (11) for excessive wear. Replace part if necessary.

(3) Remove ball pivot cam (5), two wave washers (6), washer (7), two wave washers (8), thrust washer (9), washer (10), and ball pivot bearing (11) from ball pivot shaft (3).

NOTE
If it is necessary to remove the ball pivot stop, perform remaining steps.

One method of removing flange bearings is to use vise grips to rotate flange bearings and loosen them and then use a screwdriver to pry them out.

(4) Remove two flange bearings (1, Figure 4-18) from ball pivot shaft (2).

(5) Remove ball pivot brake (3), ball pivot housing (4), and ball pivot stop (5) from ball pivot shaft (2).

(6) If broken, remove groove pin (6).

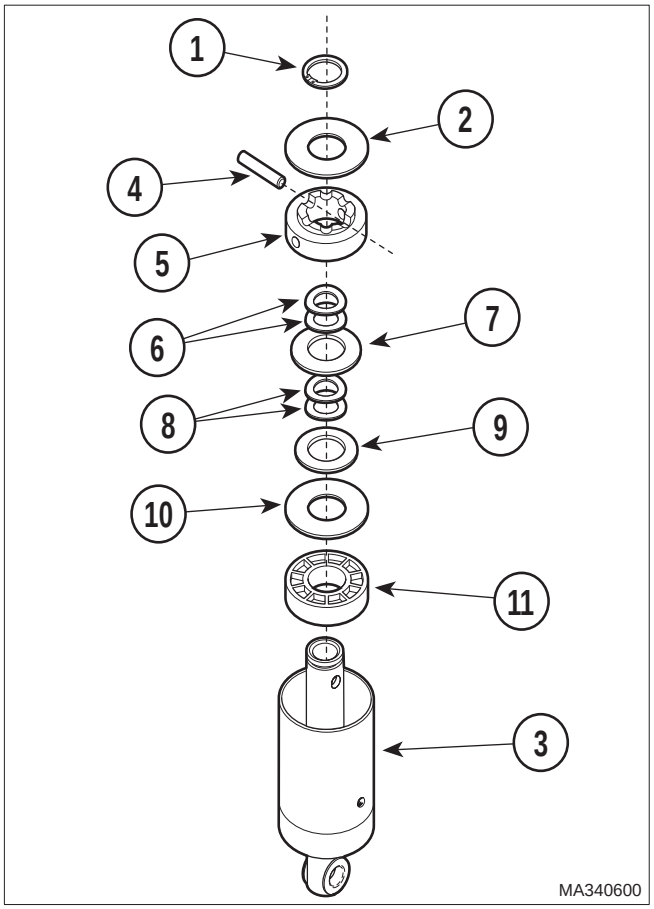

Figure 4-17. Ball Pivot Disassembly / Assembly

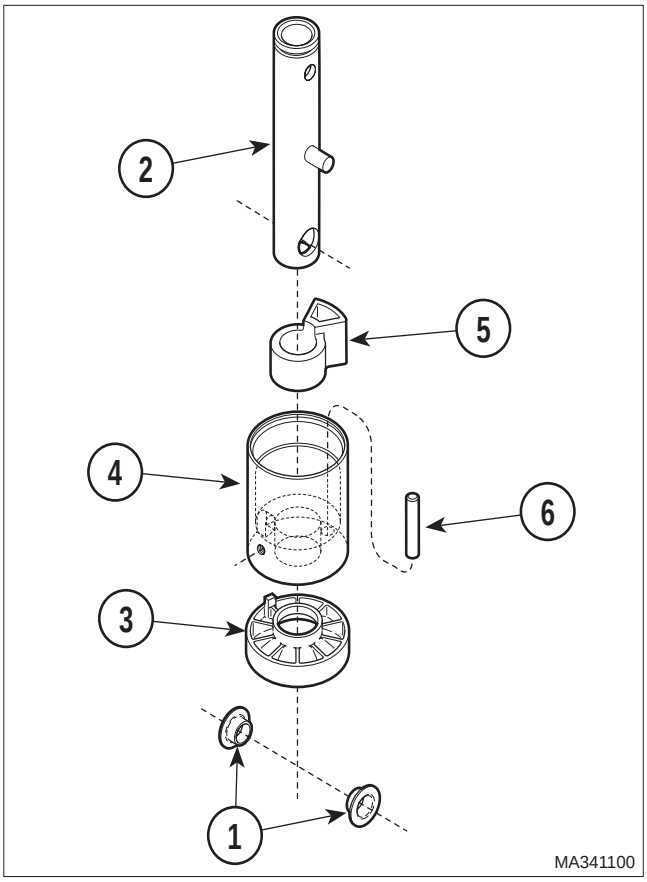

Figure 4-18. Ball Pivot Stop Removal / Installation

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C. Assembly

(1) If removed, install groove pin (6, Figure 4-18).

NOTE
To install correctly, make sure raised portion of ball pivot stop (5) is facing toward top of ball pivot shaft (2). Also, make sure the concave of ball pivot brake (3) faces the ball pivot.

(2) Install ball pivot stop (5), ball pivot housing (4), and ball pivot brake (3) on ball pivot shaft (2).

(3) Install two flange bearings (1) on ball pivot shaft (2).

NOTE
To install correctly, make sure teflon side of thrust washer (9) is placed against washer (10).

(4) Install ball pivot bearing (11, Figure 4-17), washer (10), thrust washer (9), two wave washers (8), washer (7), two wave washers (6), and ball pivot cam (5) on ball pivot shaft (3).

(5) Using a hammer and punch, drive groove pin (4) into ball pivot shaft (3).

(6) Install washer (2) on ball pivot shaft (3) and secure with retaining ring (1).

D. Installation

EQUIPMENT ALERT
When feeding wires (3) thru ball pivot assembly (5), be sure to get one wire on each side of the pins that go thru the ball pivot shaft. Failure to do so could result in the wires being severed.

(1) Feed wires (3, Figure 4-16) through ball pivot assembly (11).

(2) Strip insulation from wires (3); then install one quick disconnect (9) on each wire (3).

(3) Position ball pivot assembly (11) on cross tube (5). Then, insert a punch through pin hole.

EQUIPMENT ALERT
Use 5/16" punch or similar device to divert the wires while the groove pin is being installed. Failure to do so will result in wires being sheared off.

NOTE
When installing groove pin (4), be sure to insert the non-grooved end of the pin into the ball pivot assembly (5) first.

(4) Using punch as a wire diverter to keep wires from being sheared off, install groove pin (10) to secure cross tube / lighthead (5) in ball pivot assembly (11).

WARNING
Make sure screws (6) are installed correctly. Failure to do so could allow the light assembly to fall, striking and injuring a patient or staff member.

NOTE
There are three screw holes in ball pivot bearing (11); two holes are larger and have courser threads. Use these two holes to secure cross tube with screws (6). The other hole is for securing ball pivot sleeve with screw (1).

(5) Insert ball pivot assembly (5) into vertical tube (7) and secure with two screws (6), making sure wires (3) are fed down into vertical tube.

(6) Connect two wires (3) to two wires (4).

(7) Adjust ball pivot joint tension (Refer to para 4.11).

(8) Slide ball pivot sleeve (2) down into position and secure with screw (1).

(9) Connect electrical power to unit.

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4.13 Lamp Tube Brake Adjustment

A. Adjustment

(1) Slide pivot sleeve (1, Figure 4-19) up out of way.

(2) Remove two screws (2) from cross tube (3); then separate lamp tube (4) from cross tube as far as wiring will allow.

(3) Loosen jam nut (5).

(4) Adjust nut (6) to tighten or loosen braking tension.

(5) While holding nut (6) stationary, tighten jam nut (5) to 20 to 30 ft.-lbs (27.1 to 40.7 N•m).

(6) Install lamp tube (4) in cross tube (3) and secure with two screws (2).

(7) Check brake adjustment. The lamp tube brake should hold when released and not allow the lamp tube to drift on its own, but also should not be too stiff as to prevent easy positioning by operator. If possible, consult the operator(s) on their desired brake tension setting.

(8) Repeat steps 2 through 7 until satisfactory brake adjustment is achieved.

(9) Slide pivot sleeve (1) down over pivot joint, making sure the indentations of the pivot sleeve seat on screws.

4.14 Lighthead Brake Adjustment

A. Adjustment

(1) Slide pivot sleeve (1, Figure 4-20) down out of way.

(2) Remove two screws (2) from lamp tube (3); then separate lamp tube (3) from lighthead (4) as far as wiring will allow.

(3) Loosen jam nut (5).

(4) Adjust nut (6) to tighten or loosen braking tension.

(5) While holding nut (6) stationary, tighten jam nut (5) to 20 to 30 ft.-lbs (27.1 to 40.7 N•m).

WARNING
Make sure screws (2) are installed correctly. Failure to do so could allow the lighthead to fall, striking and injuring a patient or staff member.

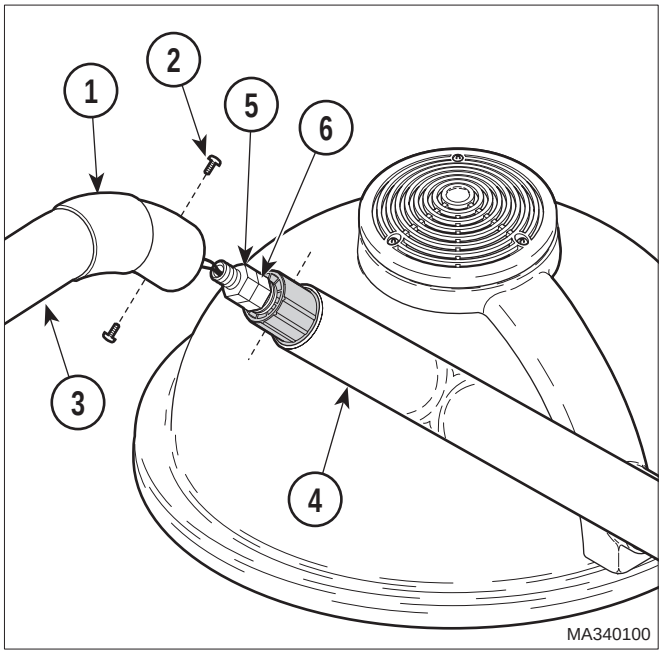

Figure 4-19. Lamp Tube Brake Adjustment

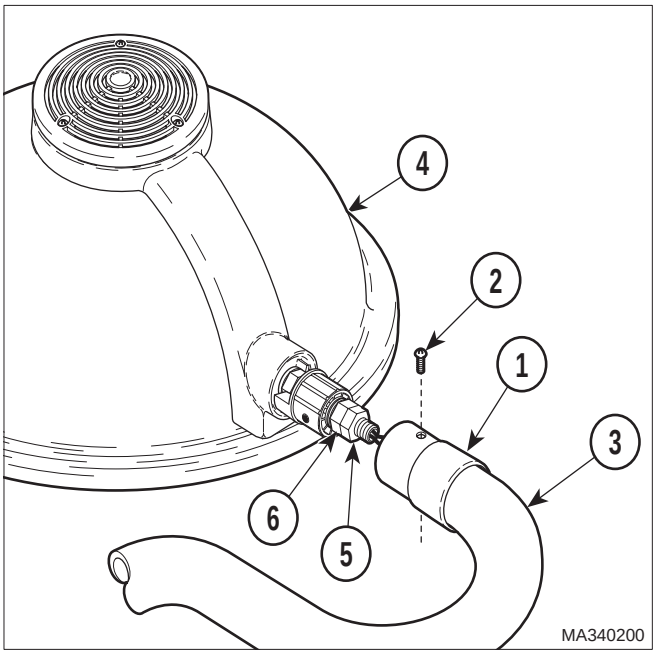

Figure 4-20. Lighthead Brake Adjustment

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(6) Install lighthead (4) in lamp tube (3) and secure with two screws (2).

(7) Check brake adjustment. The lighthead brake should hold when released and not allow the lighthead to drift on its own, but also should not be too stiff as to prevent easy positioning by operator. If possible, consult the operator(s) on their desired brake setting.

(8) Repeat steps 2 through 7 until satisfactory brake adjustment is achieved.

(9) Slide pivot sleeve (1) down over pivot joint, making sure the indentations of the pivot sleeve seats on screws.

4.15 Lighthead Pivot Bearing Stop Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers / shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Slide pivot sleeve (1, Figure 4-21) up out of way.

(3) Remove two screws (2) and partially separate lighthead (3) from lamp tube (4).

(4) Disconnect two wires (5) from two wires (6) and remove lighthead (3).

(5) Remove nut (7), nut (8), three washers (9), wave washer (10), washer (11), wave washer (12), and pivot bearing stop (13) from shaft (14).

(6) If necessary, remove wave washer (15) and three washers (16) from shaft (14).

B. Installation

(1) If removed, install three washers (16) and wave washer (15) on shaft (14).

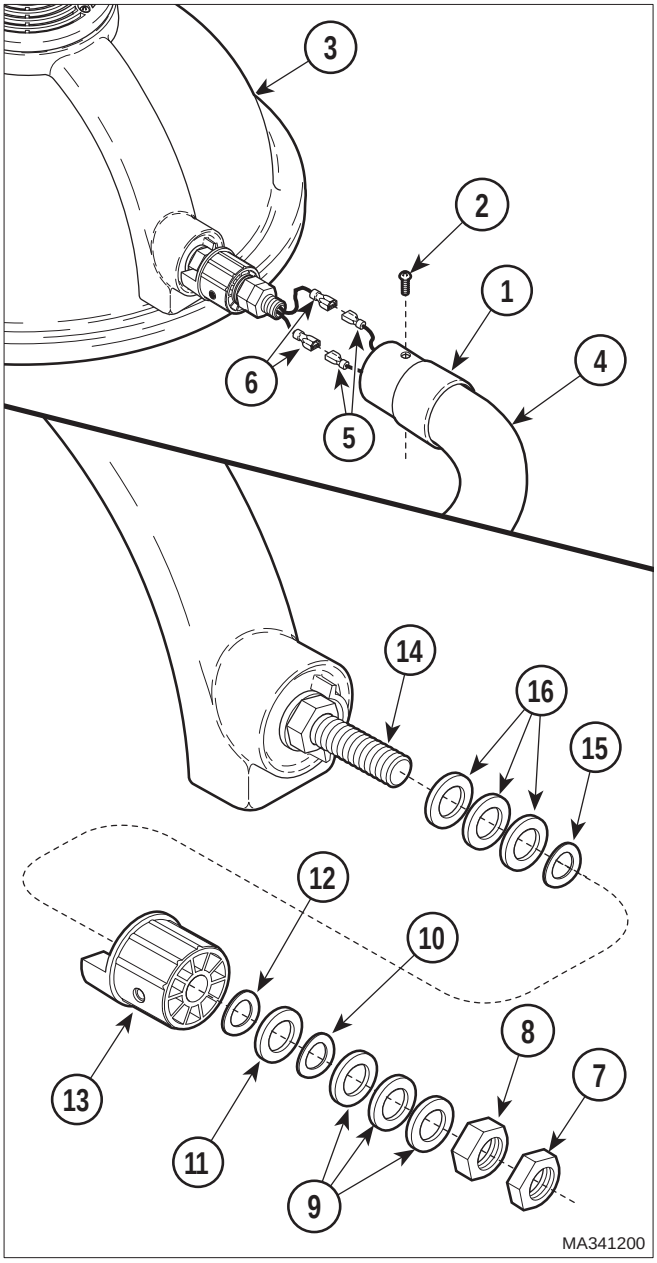

Figure 4-21. Lighthead Pivot Stop Removal / Installation

(2) Install pivot bearing stop (13), wave washer (12), washer (11), wave washer (10), three washers (9), nut (8), and nut (7) on shaft (14). Do not tighten nuts (7 and 8) at this time.

(3) Adjust nut (8) to tighten or loosen braking tension.

(4) While holding nut (8) stationary, tighten jam nut (7) to 20 to 30 ft.-lbs (27.1 to 40.7 N•m).

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(5) Connect two wires (6) to two wires (5).

WARNING
Make sure screws (2) are installed correctly. Failure to do so could allow the lighthead assembly to fall, striking and injuring a patient or staff member.

(6) Insert lighthead (3) in lamp tube (4) and secure with two screws (2).

(7) Check brake adjustment. The lighthead should hold when released and not allow the lighthead to drift down on its own, but also should not be too stiff as to prevent easy positioning by the operator. If possible, consult the operator(s) on their desired brake setting.

(8) Repeat steps 3 thru 7 as necessary until desired braking action is attained.

(9) Slide pivot sleeve (1) down over pivot joint, making sure the indentions of the pivot sleeve seats on screws.

(10) Connect electrical power to unit.

4.16 Main Pivot Stop Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Remove cross tube (perform steps 1 thru 4 of para 4.12, Removal)

(3) Remove four screws (1, Figure 4-22) and ceiling cover (2) from ceiling plate assembly (3).

(4) While pulling wires (4) up thru down tube (5), remove two screws (6) and down tube from main pivot housing (7).

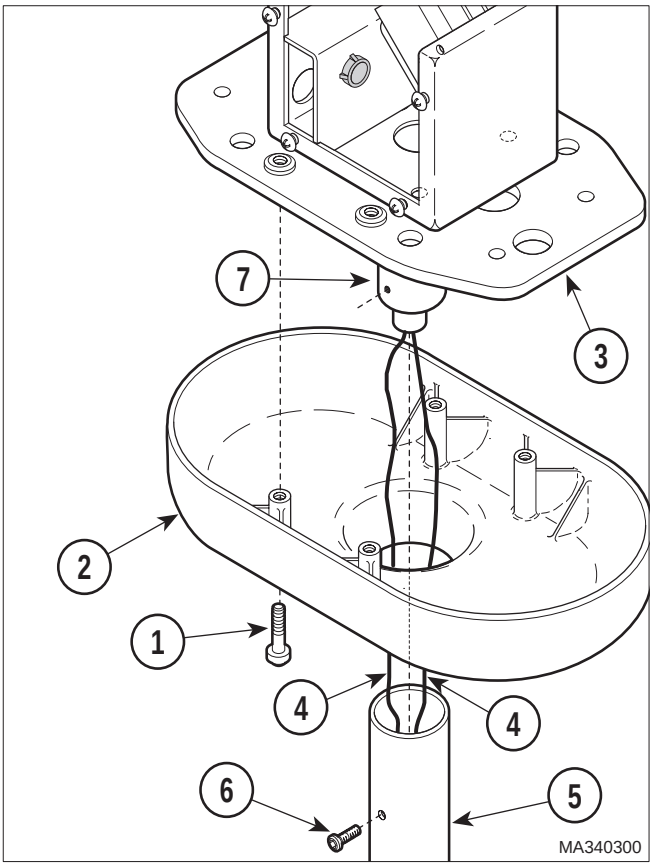

Figure 4-22. Lighthead / Cross Tube Removal / Installation

(5) Using a hammer and punch, drive groove pin (1, Figure 4-23) out of main shaft weldment (2) and remove washer (3), main pivot housing (4) and main pivot stop (5) from main shaft weldment.

(6) If broken, remove groove pin (6 and / or 7).

B. Installation

(1) If removed, install groove pin (6 and / or 7, Figure 4-23).

EQUIPMENT ALERT
Make sure that strain relief knot is above the groove pin (1) and that only one wire is on either side of the groove pin. Also, when installing groove pin, make sure it doesn't knick or tear the wires.

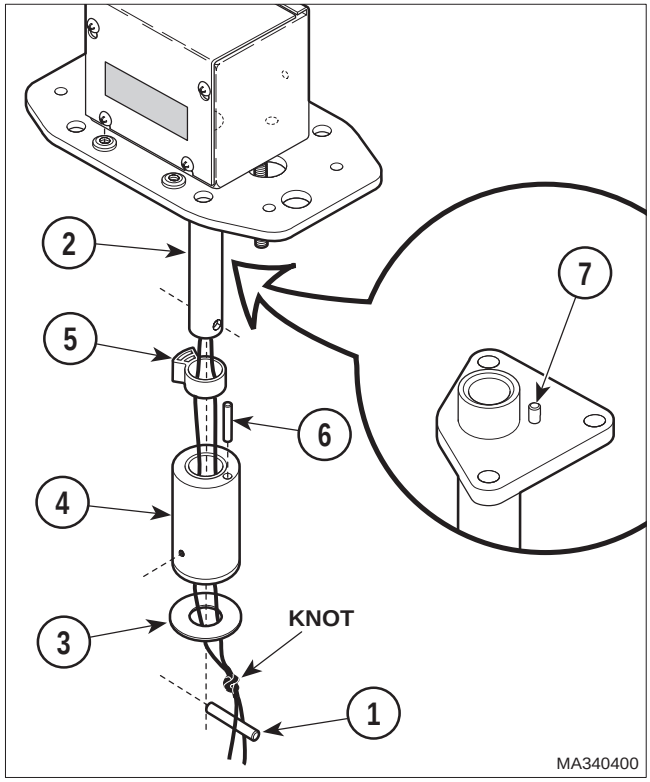

Figure 4-23. Main Pivot Stop Removal / Installation

(2) Install main pivot stop (5), main pivot housing (4) and washer (3) on main shaft weldment (2) and secure by driving groove pin (1) in main shaft weldment.

(3) Coat threads of two screws (6, Figure 4-22) with removable threadlocking adhesive (Loctite 242).

WARNING
Make sure screws (6) are installed correctly. Failure to do so could allow the lighting system to fall, striking and injuring a patient or staff member.

(4) While feeding two wires (4) up thru down tube (5), install down tube on main pivot housing (7) and secure with two screws (6). Tighten screws to 40 to 50 in-lbs (4.5 to 5.6 N m).

(5) Install cross tube (Perform steps 5 thru 8 of para 4.12, Installation).

(6) Install ceiling cover (2) on ceiling plate assembly (3) and secure it with four screws (1).

(7) Check for correct installation; if main pivot housing was installed correctly, the down tube can be rotated 580°.

(8) Connect electrical power to unit.

4.17 Lamp Tube Pivot Stop Removal / Installation

A. Removal

WARNING
Always disconnect electrical power to the unit before removing any of the unit's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect electrical power to unit.

(2) Slide pivot sleeve (1, Figure 4-24) up out of way.

(3) Remove two screws (2) and partially separate lighthead (3) from lamp tube (4).

(4) Disconnect two wires (5) from two wires (6) and remove lighthead (3).

(5) Slide pivot sleeve (7) up out of way.

(6) Remove two screws (8) and separate lamp tube (4) from cross tube (9).

NOTE
If two wires (5) cannot be pulled out of lamp tube, the two quick disconnects must be cut from wires.

(7) Pull two wires (5) out of lamp tube (4).

(8) Remove nut (10), nut (11), three washers (12), wave washer (13), washer (14), wave washer (15), pivot bearing (16), two wave washers (17), and lamp tube pivot stop (18) from shaft (19).

B. Installation

(1) Install lamp tube pivot stop (18), two wave washers (17), pivot bearing (16), wave washer (15), washer (14), wave washer (13), three washers (12), nut (11), and nut (10) on shaft (19). Do not tighten nuts at this time.

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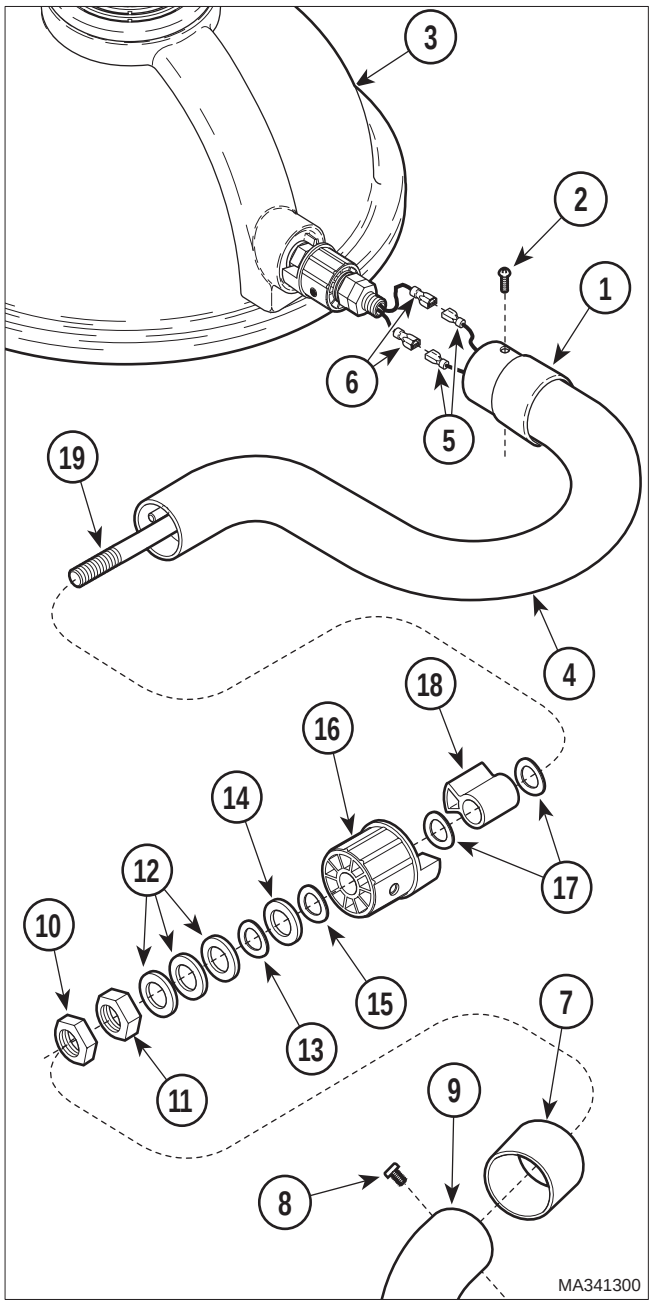

Figure 4-24. Lamp Tube Pivot Stop Removal / Installation

(2) Feed two wires (5) thru lamp tube (4). If removed, strip insulation from wires and then install two quick disconnects on two wires (5).

(3) Connect two wires (5) to two wires (6).

(4) Insert lighthead (3) into lamp tube (4) and secure with two screws (2).

(5) Slide pivot sleeve (1) down over joint, making sure the indentations of the pivot sleeve seats on screws.

NOTE
Factory recommendation: Tighten nut (11) to 2.0 to 3.0 in. / lbs. (0.22 to 0.33 N•m), however, this may be adjusted to the user's preference.

(6) Adjust nut (11) to tighten or loosen braking tension.

(7) While holding nut (11) stationary, tighten jam nut (10) to 20 to 30 ft.-lbs (27.1 to 40.7 N•m).

WARNING
Make sure screws (2) are installed correctly. Failure to do so could allow the faceplate assembly to fall, striking and injuring a patient or staff member.

(8) Insert lamp tube (4) into cross tube (9) and secure with two screws (8).

(9) Check brake adjustment. The lamp tube brake should hold when released and not allow the lamp tube to drift on its own, but also should not be too stiff as to prevent easy positioning by operator. If possible, consult the operator(s) on their desired brake setting.

(10) Repeat steps 6 thru 9 as necessary until desired braking action is attained.

(11) Slide pivot sleeve (7) down over pivot joint, making sure the indentations of the pivot sleeve seats on screws.

(12) Connect electrical power to unit.

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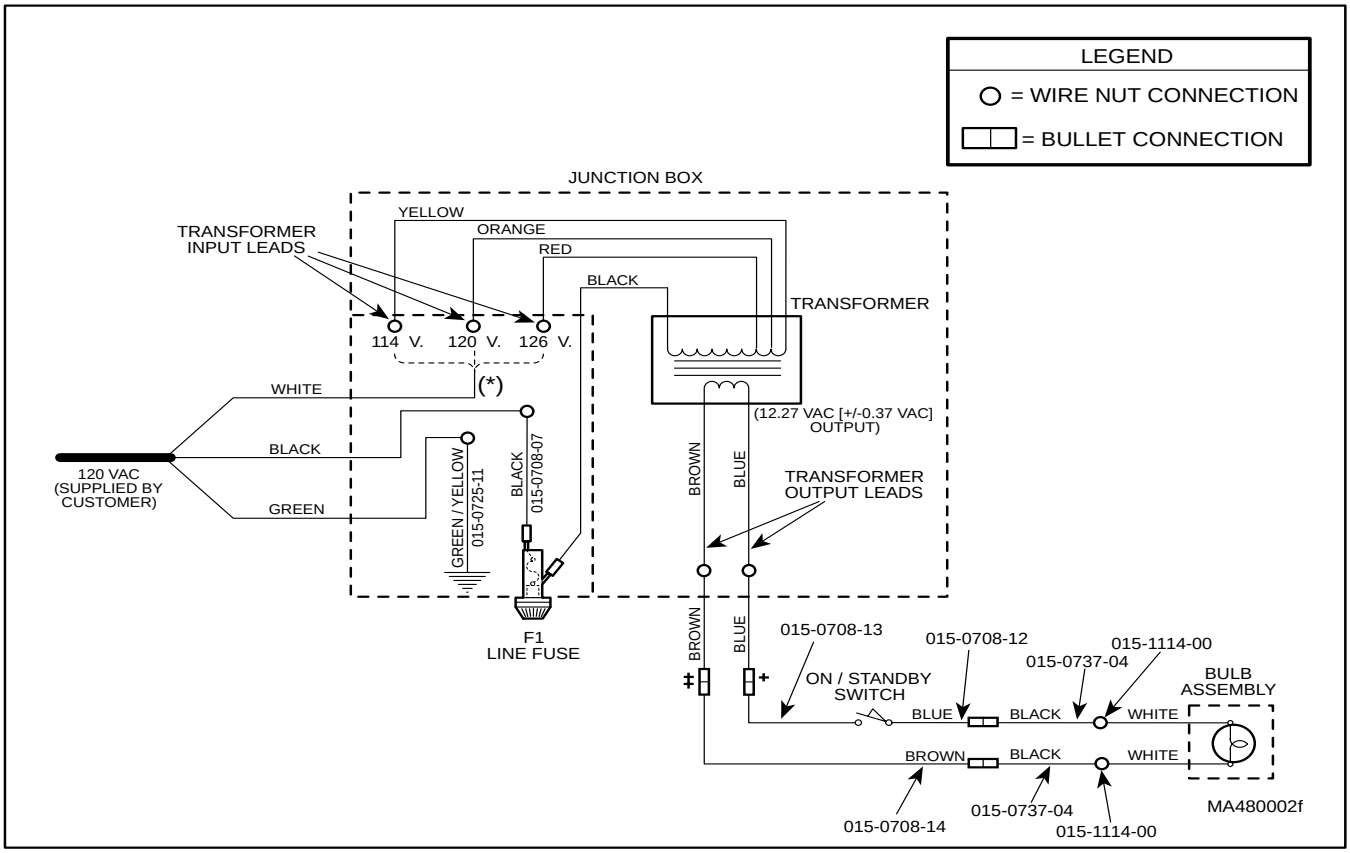
SECTION V
SCHEMATICS AND DIAGRAMS

5.1 Electrical Schematics / Wiring Diagrams

Figure 5-1 illustrates the logic / current flow and wiring connections between the electrical components in a single lighting system for the 120 VAC model. Since each junction box is wired separately, the electrical schematic / wiring diagram for a dual lighting system is the same. Figure 5-2 refers to the 220 VAC model.



(*) NOTE
Select transformer input tap by measuring the input voltage. Then connect the power lead (white wire) to one of the following according to the input voltage measured:

117.0 VAC or lower - Use the YELLOW lead
117.1 to 123.0 VAC - Use the ORANGE lead
123.1 VAC or higher _ Use the RED lead

+ 355 (-001, -002, -007, -008) use 015-0708-15
355 (-003, -004, -009, -010) use 015-0708-17

‡ 355 (-001, -002, -007, -008) use 015-0708-16
355 (-003, -004, -009, -010) use 015-0708-18

Figure 5-1. Electrical Schematic / Wiring Diagram
355 (-001 thru -004 & -007 thru -010) 120 VAC Units

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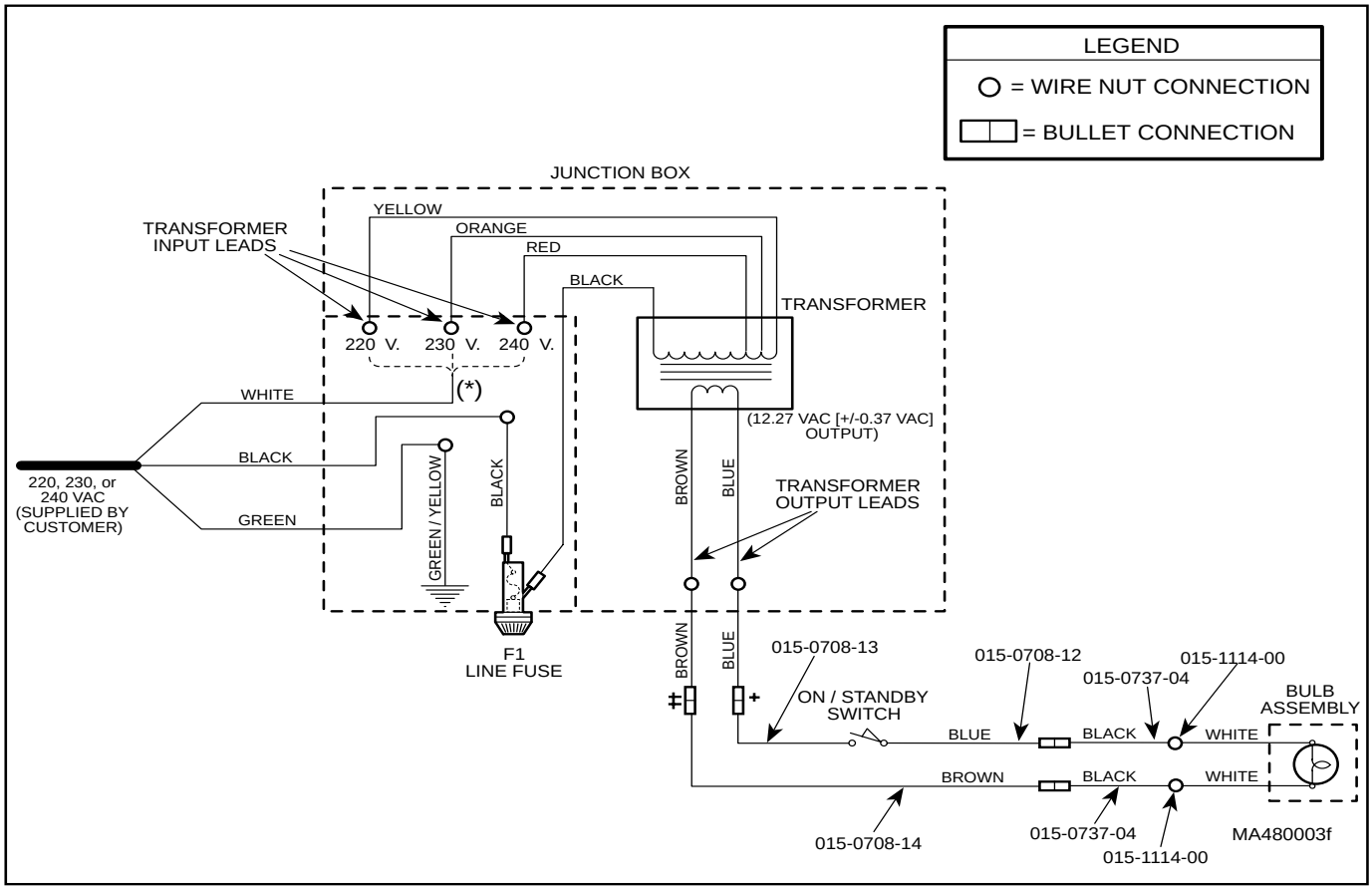
SECTION V
SCHEMATICS AND DIAGRAMS



(*) NOTE
Select transformer input tap by measuring the input voltage. Then connect the power lead (white wire) to one of the following according to the input voltage measured:

225.0 VAC or lower - Use the YELLOW lead
225.1 to 235.0 VAC - Use the ORANGE lead
235.1 VAC or higher _ Use the RED lead

+ 355 (-012, -013) use 015-0708-15
355 (-014, -015) use 015-0708-17

‡ 355 (-012, -013) use 015-0708-16
355 (-014, -015) use 015-0708-18

Figure 5-2. Electrical Schematic / Wiring Diagram
355 (-012 thru -015) 220 VAC Units

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SECTION VI
PARTS LIST

6.1 Introduction

The illustrated parts list provides information for identifying and ordering the parts necessary to maintain the unit in peak operating condition. Refer to paragraph 1.5 for parts ordering information.

6.2 Description of Columns

The Item column of the parts list gives a component its own unique number. The same number is given to the component in the parts illustration. This allows a part number of a component to be found if the technician can visually spot the part on the illustration. The technician simply finds the component in question on the illustration and notes the item number of that component. Then, he finds that item number in the parts list. The row corresponding to the item number gives the technician the part number, a description of the component, and quantity of parts per subassembly. Also, if a part number is known, the location of that component can be determined by looking for the item number of the component on the illustration.

The Part No. column lists the MIDMARK part number for that component.

The Description column provides a physical description of the component.

The Qty. column lists the number of units of a particular component that is required for the subassembly. The letters “AR” denote “as required” when quantities of a particular component cannot be determined, such as: adhesive.

Bullets { • } in the Part No. column and the Description column show the indenture level of a component. If a component does not have a bullet, it is a main component of that illustration. If a component has a bullet, it is a subcomponent of the next component listed higher in the parts list than itself that does not have a bullet. Likewise, if a component has two bullets, it is a subcomponent of the next component listed higher in the parts list than itself that has only one bullet.

6.3 Torque Specifications and Important Assembly Notes

When specific assembly torque specifications, measurements, or procedures have been identified, by our engineering department, as required to assure proper function of the unit, those torque specifications measurements, and procedures will be noted on the parts illustrations. Adherence to these requirements is essential.

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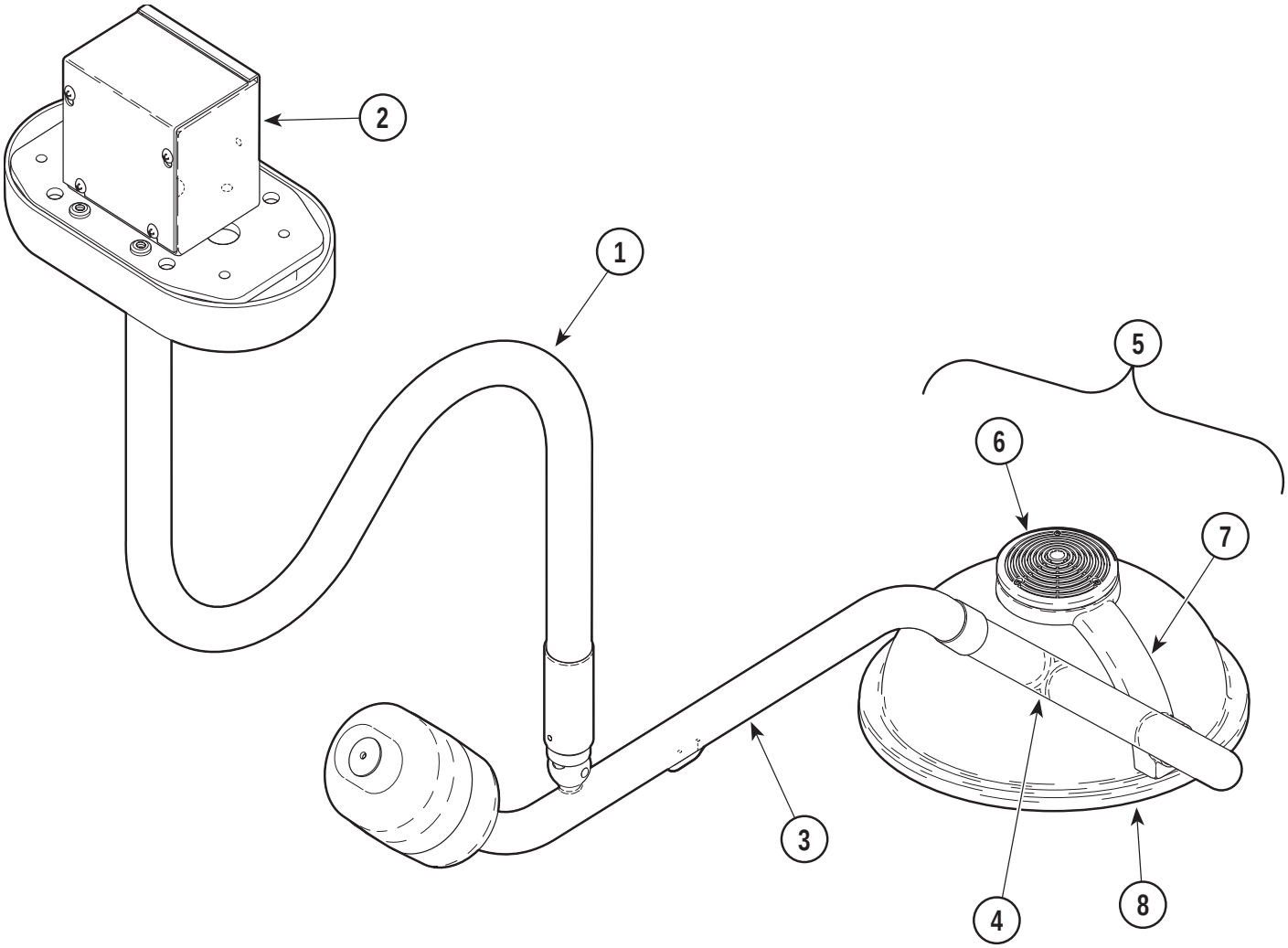
355 Single Light System



MA319101

Item	Part No.	Description	Page
	355-001	120 V. Ritter 355 Single Light System - 9' {Serial Number Prefix = "FS"} (Includes Items 1 thru 5)	6-2
	355-003	120 V. Ritter 355 Single Light System - 8' {Serial Number Prefix = "FT"} (Includes Items 1 thru 5)	6-2
	355-007	120 V. Midmark 355 Single Light Sys. - 9' {Serial Number Prefix = "HV"} (Includes Items 1 thru 5)	6-2
	355-009	120 V. Midmark 355 Single Light Sys. - 8' {Serial Number Prefix = "HW"} (Includes Items 1 thru 5)	6-2
	355-012	220 V. Midmark 355 Single Light Sys. - 9' {Serial Number Prefix = "JC"} (Includes Items 1 thru 5)	6-2
	355-014	220 V. Midmark 355 Single Light Sys. - 8' {Serial Number Prefix = "JD"} (Includes Items 1 thru 5)	6-2

Item	Part No.	Description	Page
1	•	• Down Tube Assembly	6-5
2	•	• Single Ceiling Plate Assembly	6-6
3	•	• Cross Tube Assembly	6-7.*
4	•	• Lamp Tube Assembly	6-8
5	•	• Lighthead Assembly (Includes Items 6 thru 8)	6-9
6	• •	• • Top Cap Assembly	6-10
7	• •	• • Support Arm Pivot Assembly	6-11
8	• •	• • Faceplate Assembly	6-12

Always Specify Model & Serial Number

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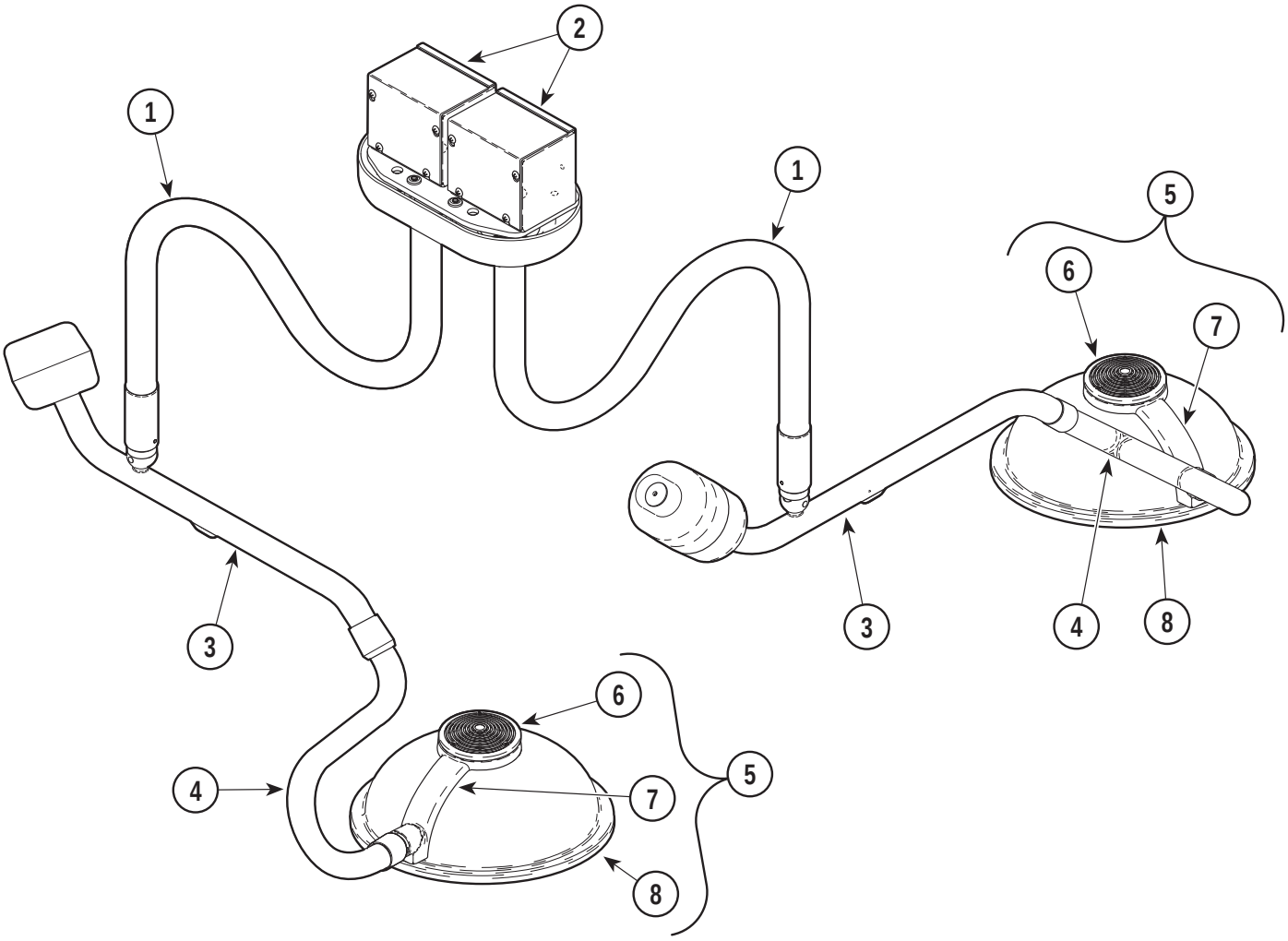
355 Double Light System



MA319301

Item	Part No.	Description	Qty.
	355-002	120 V. Ritter 355 Double Light System - 9' {Serial Number Prefix = "FS"} (Includes Items 1 thru 5)	6-2
	355-004	120 V. Ritter 355 Double Light System - 8' {Serial Number Prefix = "FT"} (Includes Items 1 thru 5)	6-2
	355-008	120 V. Midmark 355 Double Light Sys. - 9' {Serial Number Prefix = "HV"} (Includes Items 1 thru 5)	6-2
	355-010	120 V. Midmark 355 Double Light Sys. - 8' {Serial Number Prefix = "HW"} (Includes Items 1 thru 5)	6-2
	355-013	220 V. Midmark 355 Double Light Sys. - 9' {Serial Number Prefix = "JC"} (Includes Items 1 thru 5)	6-2
	355-015	220 V. Midmark 355 Double Light Sys. - 8' {Serial Number Prefix = "JD"} (Includes Items 1 thru 5)	6-2

Item	Part No.	Description	Qty.
1	•	• Down Tube Assembly	6-5
2	•	• Double Ceiling Plate Assembly	6-6
3	•	• Cross Tube Assembly	6-7.*
4	•	• Lamp Tube Assembly	6-8
5	•	• Lighthead Assembly (Includes Items 6 thru 8)	6-9
6	• •	• • Top Cap Assembly	6-10
7	• •	• • Support Arm Pivot Assembly	6-11
8	• •	• • Faceplate Assembly	6-12

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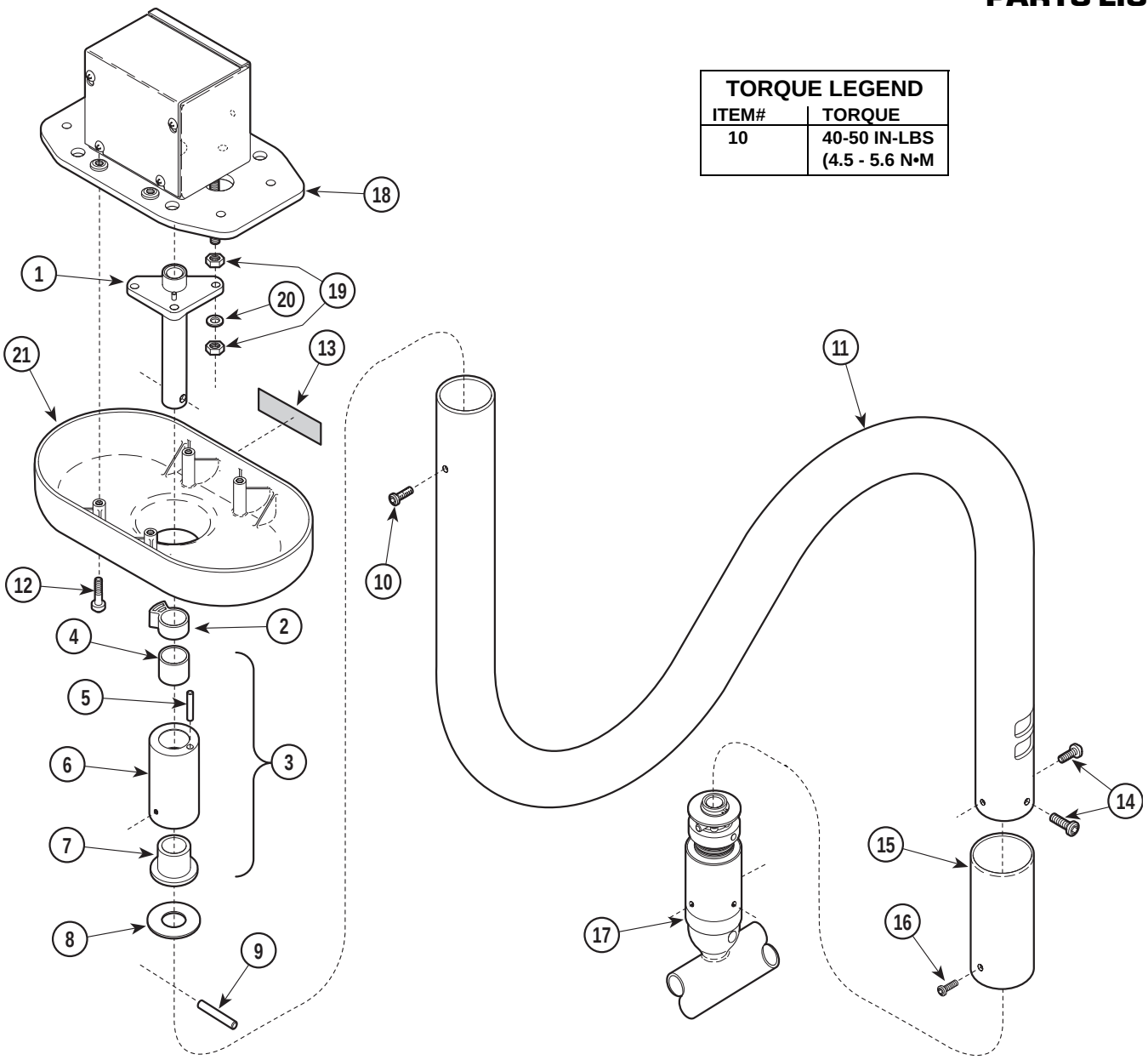
Down Tube Assembly

TORQUE LEGEND	
ITEM#	TORQUE
10	40-50 IN-LBS (4.5 - 5.6 N•M



MA318801

Item	Part No.	Description	Qty.
	002-0572-00	8' Down Tube Assembly (Includes Items 1 thru 11)	1
	002-0571-00	9' Down Tube Assembly (Includes Items 1 thru 11)	1
1	• 030-1007-00	• Main Shaft Weldment	1
2	• 002-0561-00	• Main Pivot Stop Kit (Includes Item 9)	1
3	• 029-1935-00	• Main Bearing Assembly (Includes Items 4 thru 7)	1
4	• • 016-0540-02	• • DX Bearing	1
5	• • 042-0157-01	• • Groove Pin	1
6	• • 057-0412-00	• • Main Pivot Housing	1
7	• • 016-0131-15	• • Flanged Bearing	1
8	• 045-0001-113	• Washer	1
9	• 042-0157-01	• Groove Pin	1
10	• 040-0010-131	• Screw (Apply Loctite #042-0024-00)	2
11	• 052-0314-00	• 8' Down Tube	1
	• 052-0264-00	• 9' Down Tube	1

Item	Part No.	Description	Qty.
12	040-0010-132	Screw	4
13	561-0201-00	Flammable Anesthetics Label	1
14	040-0010-131	Screw	2
15	053-0807-00	Ball Pivot Sleeve	1
16	040-0008-91	Screw	1
17		Cross Tube Assembly (Refer to "Cross Tube Assembly" Elsewhere)	Ref.
18		Ceiling Plate (Refer to "Single or Double Ceiling Plate Assembly" Elsewhere)	Ref.
19	041-0375-01	Nut (Single Units)	6
	041-0375-01	Nut (Double Units)	12
20	045-0001-09	Lockwasher (Single Units)	3
	045-0001-09	Lockwasher (Double Units)	6
21	053-0733-00	Single Ceiling Cover (Shown)	1
	053-0758-00	Double Ceiling Cover (Not Shown)	1
22	002-0592-00	Dimmer Control Kit (Not Shown)	1

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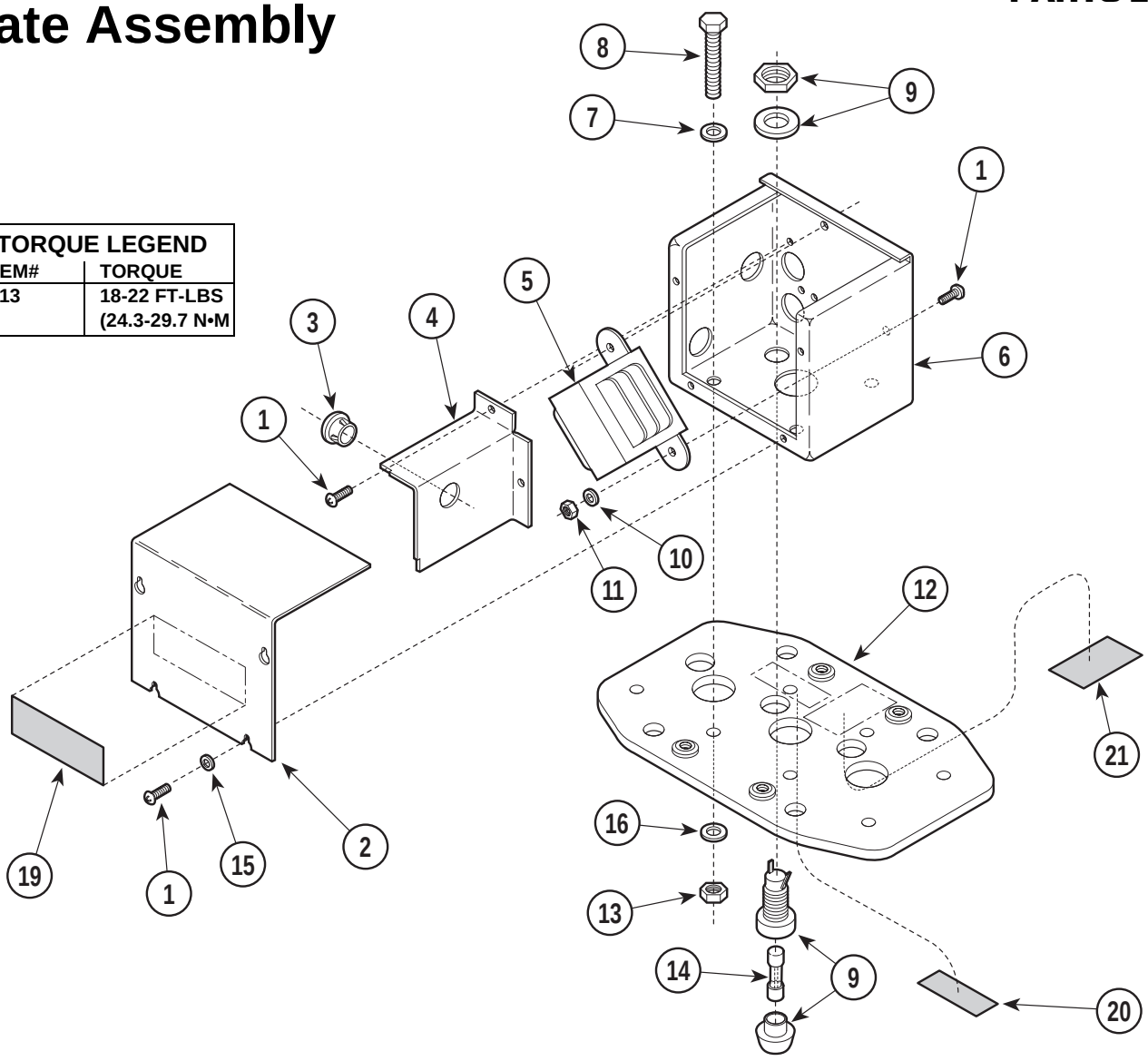
Single Ceiling Plate Assembly

TORQUE LEGEND	
ITEM#	TORQUE
13	18-22 FT-LBS (24.3-29.7 N•M



MA319000

Item	Part No.	Description	Qty.
	029-1934-00	Ceiling Plate Assembly-Single [120 VAC] (Includes Items 1 thru 18)	1
	029-2144-00	Ceiling Plate Assembly-Single [220 VAC] (Includes Items 1 thru 18)	1
1	• 040-0010-18	• Screw	9
2	• 050-3591-00	• Junction Box Cover	1
3	• 053-0068-01	• Snap Bushing	1
4	• 050-3595-00	• Junction Box Divider	1
5	• 002-0534-00	• Transformer Kit [120 VAC]	1
	• 015-1160-00	• Transformer Assembly [220 VAC]	1
6	• 050-3599-00	• Junction Box	1
7	• 045-0001-49	• Washer	3
8	• 040-0375-62	• Screw	3
9	• 015-0969-00	• Fuse Holder Assembly [120 VAC] (Includes Body, Cap, Washer and Nut)	1
	• 015-1059-00	• Fuse Holder Assembly [220 VAC] (Includes Body, Cap, Washer and Nut)	1

Item	Part No.	Description	Qty.
10	• 045-0001-04	• Lockwasher	2
11	• 041-0010-00	• Nut	2
12	• 030-1024-00	• Ceiling Plate Weldment	1
13	• 041-0375-01	• Nut	3
14	• 015-0346-08	• Fuse [120 VAC] (3 amp)	1
	• 015-0346-25	• Fuse [220 VAC] (0.8 amp)	1
15	• 045-0001-31	• Lockwasher	2
16	• 045-0001-09	• Lockwasher	3
17	• 015-0013-00	• Cable Tie (Not Shown)	1
18	• 015-1113-00	• Wire Nut - Grey (Not Shown)	2
	• 800400	• Wire Nut - Orange (Not Shown)	5
19	561-0191-00	Electric Shock Label	1
20	061-0611-00	Fuse Replacement Label	1
21	561-0318-00	U.L. / C.U.L. Label	1

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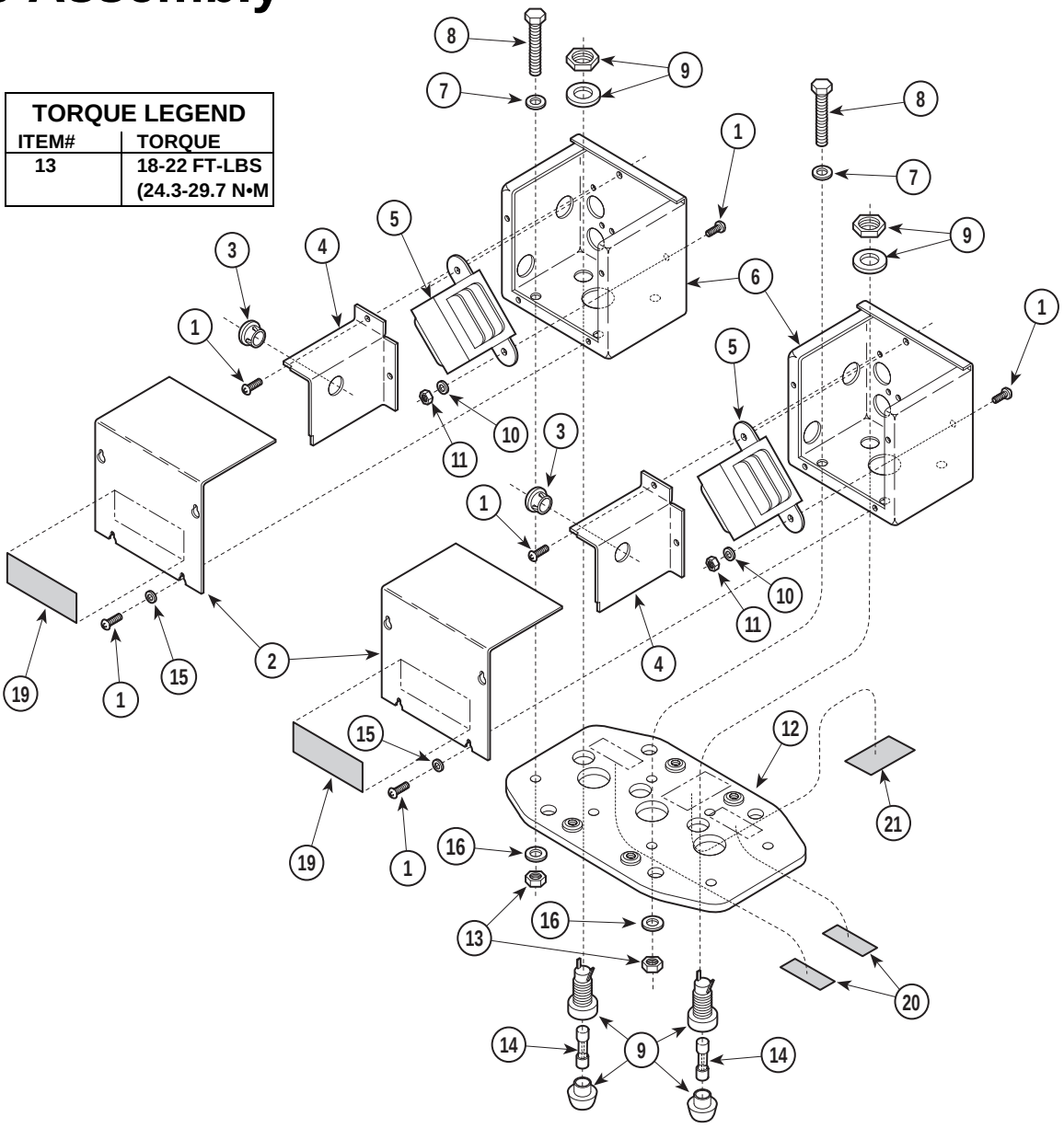
Double Ceiling Plate Assembly

TORQUE LEGEND	
ITEM#	TORQUE
13	18-22 FT-LBS (24.3-29.7 N•M



MA318900

Item	Part No.	Description	Qty.
	029-1949-00	Ceiling Plate Assembly-Double [120 VAC] (Includes Items 1 thru 18)	1
	029-2145-00	Ceiling Plate Assembly-Double [220 VAC] (Includes Items 1 thru 18)	1
1	• 040-0010-18	• Screw	18
2	• 050-3591-00	• Junction Box Cover	2
3	• 053-0068-01	• Snap Bushing	2
4	• 050-3595-00	• Junction Box Divider	2
5	• 002-0534-00	• Transformer Kit [120 VAC]	2
	• 015-1160-00	• Transformer Assembly [220 VAC]	2
6	• 050-3599-00	• Junction Box	2
7	• 045-0001-49	• Washer	6
8	• 040-0375-62	• Screw	6
9	• 015-0969-00	• Fuse Holder Assembly [120 VAC] (Includes Body, Cap, Washer and Nut)	2
	• 015-1059-00	• Fuse Holder Assembly [220 VAC] (Includes Body, Cap, Washer and Nut)	2
10	• 045-0001-04	• Lockwasher	4
11	• 041-0010-00	• Nut	4
12	• 030-1024-00	• Ceiling Plate Weldment	1
13	• 041-0375-01	• Nut	6
14	• 015-0346-08	• Fuse [120 VAC] (3 amp)	2
	• 015-0346-25	• Fuse [220 VAC] (0.8 amp)	2
15	• 045-0001-31	• Lockwasher	4
16	• 045-0001-09	• Lockwasher	6
17	• 015-0013-00	• Cable Tie (Not Shown)	2
18	• 015-1113-00	• Wire Nut - Grey (Not Shown)	4
	• 800400	• Wire Nut - Orange (Not Shown)	10
19	561-0191-00	Electric Shock Label	2
20	061-0611-00	Fuse Replacement Label	2
21	561-0318-00	U.L. / C.U.L. Label	1

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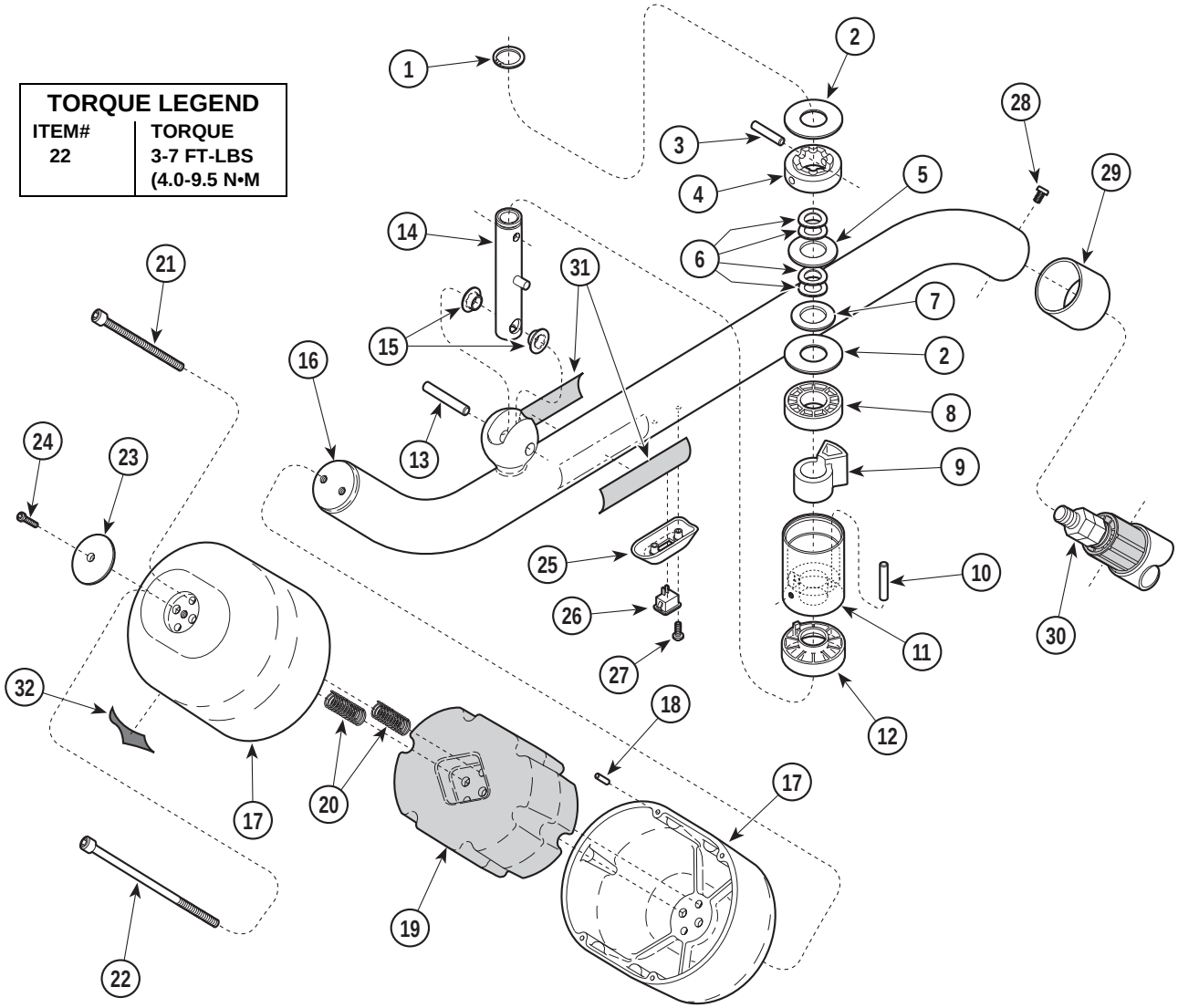
Cross Tube Assembly

TORQUE LEGEND	
ITEM#	TORQUE
22	3-7 FT-LBS (4.0-9.5 N•M



MA318700

Used on units with Serial Number FS1000 thru FS1185 and FT1000 thru FT1221

Item	Part No.	Description	Qty.
	029-1920-00	Cross Tube Assembly (Includes Items 1 thru 22)	1
1	• 042-0101-05	• Retaining Ring	1
2	• 045-0001-111	• Washer	2
3	• 042-0157-01	• Groove Pin	1
4	• 057-0414-00	• Ball Pivot Cam	1
5	• 045-0001-112	• Washer	1
6	• 045-0001-110	• Wave Washer	4
7	• 016-0671-00	• DU Thrust Washer	1
8	• 053-0800-00	• Ball Pivot Bearing	1
9	• 002-0562-00	• Ball Pivot Stop Kit (Includes Items 3 and 15)	1
10	• 042-0157-00	• Groove Pin	1
11	• 057-0413-00	• Ball Pivot Housing	1
12	• 053-0798-00	• Ball Pivot Brake	1
13	• 042-0157-03	• Groove Pin	1
14	• 030-1074-00	• Ball Pivot Shaft Weldment	1
15	• 016-0392-07	• DU Flange Bearing	2
16	• 002-0619-00	• Cross Tube Weldment	1
17	• 020-0168-00	• Ballast Housing	2
18	• 042-0157-04	• Groove Pin	4
19	• 020-0169-00	• Ballast	1
20	• 525-0024-11	• Spring	3
21	• 040-0250-144	• Screw	1
22	• 040-0312-57	• Screw	2
23	053-0810-00	Housing Cap	1
24	040-0010-70	Screw	1
25	053-0812-00	Switch Bezel	1
26	015-1086-00	Rocker Switch	1
27	040-0006-80	Screw	2
28	040-0010-131	Screw	2
29	053-0802-00	Common Pivot Sleeve	1
30		Lamp Tube (Refer to “Lamp Tube Assembly” Elsewhere)	Ref.
31	061-0610-00	Ritter 355 Model Label	2
	061-0656-00	Midmark 355 Model Label	2
32		Serial Number Label	Ref.

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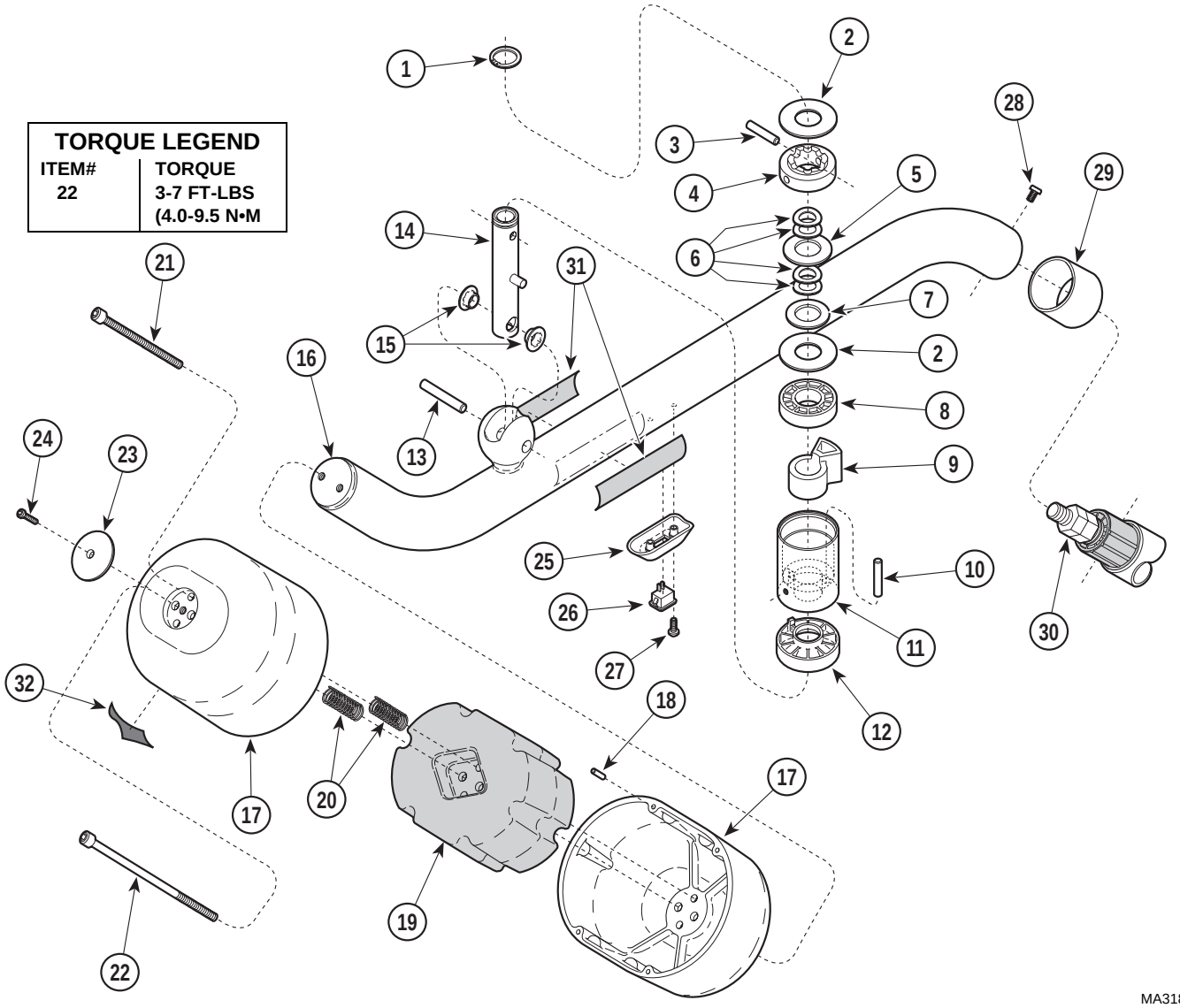
Cross Tube Assembly



MA318701

Used on units with Serial Number FS1186 thru FS2305, FT1222 thru FT2653, HV1000 thru HV1080, HW1000 thru HW1121, JC1000 thru JC1010 & JD1000 thru JD1000

Item	Part No.	Description	Qty.
	029-1920-00	Cross Tube Assembly (Includes Items 1 thru 22)	1
1	• 042-0101-05	• Retaining Ring	1
2	• 045-0001-111	• Washer	2
3	• 042-0157-01	• Groove Pin	1
4	• 057-0414-00	• Ball Pivot Cam	1
5	• 045-0001-112	• Washer	1
6	• 045-0001-110	• Wave Washer	5
7	• 016-0671-00	• DU Thrust Washer	1
8	• 053-0800-00	• Ball Pivot Bearing	1
9	• 002-0562-00	• Ball Pivot Stop Kit (Includes Items 3 and 15)	1
10	• 042-0157-00	• Groove Pin	1
11	• 057-0413-00	• Ball Pivot Housing	1
12	• 053-0798-00	• Ball Pivot Brake	1
13	• 042-0157-03	• Groove Pin	1
14	• 030-1074-00	• Ball Pivot Shaft Weldment	1
15	• 016-0392-07	• DU Flange Bearing	2
16	• 002-0619-00	• Cross Tube Weldment	1
17	• 020-0168-00	• Ballast Housing	2
18	• 042-0157-04	• Groove Pin	4
19	• 020-0169-00	• Ballast	1
20	• 525-0024-11	• Spring	3
21	• 040-0250-144	• Screw	1
22	• 040-0312-57	• Screw	2
23	053-0810-00	Housing Cap	1
24	040-0010-70	Screw	1
25	053-0812-00	Switch Bezel	1
26	015-1086-00	Rocker Switch	1
27	040-0006-80	Screw	2
28	040-0010-131	Screw	2
29	053-0802-00	Common Pivot Sleeve	1
30		Lamp Tube (Refer to “Lamp Tube Assembly” Elsewhere)	Ref.
31	061-0610-00	Ritter 355 Model Label	2
	061-0656-00	Midmark 355 Model Label	2
32		Serial Number Label	Ref.

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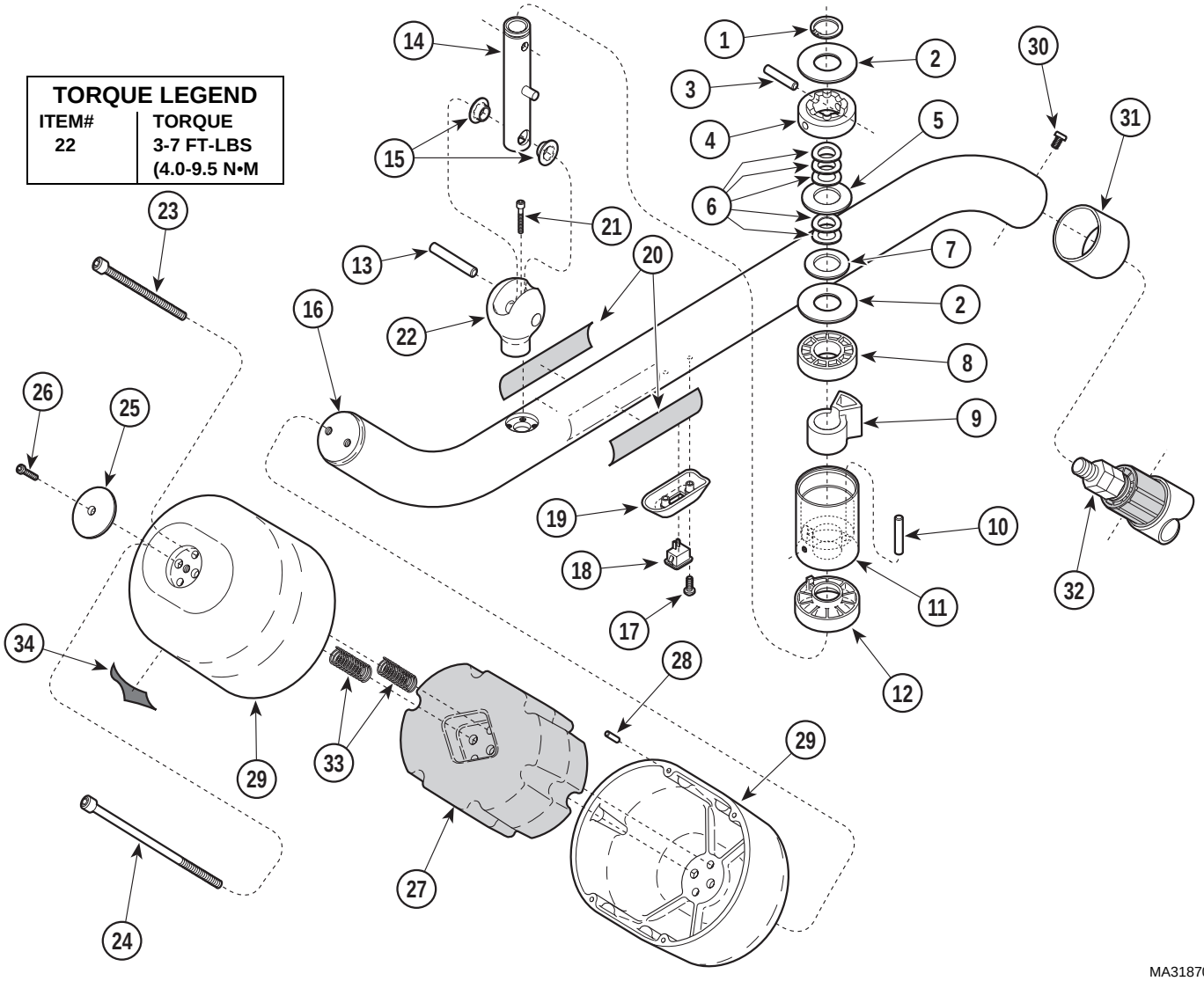
Cross Tube Assembly

TORQUE LEGEND	
ITEM#	TORQUE
22	3-7 FT-LBS (4.0-9.5 N•M



MA318701

Used on units with Serial Number FS2306, FT2654, HV1081, HW1122, JC1011 & JD1001 thru Present

Item	Part No.	Description	Qty.
	002-0616-00	Cross Tube Assembly (Includes Items 1 thru 22)	1
1	• 042-0101-05	• Retaining Ring	1
2	• 045-0001-111	• Washer	2
3	• 042-0157-01	• Groove Pin	1
4	• 057-0414-00	• Ball Pivot Cam	1
5	• 045-0001-112	• Washer	1
6	• 045-0001-110	• Wave Washer	5
7	• 016-0671-00	• DU Thrust Washer	1
8	• 053-0800-00	• Ball Pivot Bearing	1
9	• 002-0562-00	• Ball Pivot Stop Kit (Includes Items 3 and 15)	1
10	• 042-0157-00	• Groove Pin	1
11	• 057-0413-00	• Ball Pivot Housing	1
12	• 053-0798-00	• Ball Pivot Brake	1
13	• 042-0157-03	• Groove Pin	1
14	• 030-1074-00	• Ball Pivot Shaft Weldment	1
15	• 016-0392-07	• DU Flange Bearing	2
16	• 030-1162-00	• Ceiling Cross Tube Weldment	1
17	• 040-0006-80	• Screw	2
18	• 015-1086-00	• Rocker Switch	1
19	• 053-0812-00	• Switch Bezel	1
20	• 061-0610-00	• Ritter 355 Model Label	2
	• 061-0656-00	• Midmark 355 Model Label	2
21	• 040-0006-91	• Screw	4
22	• 057-0483-00	• Ball Pivot	1
23	040-0250-144	Screw	1
24	040-0312-57	Screw	2
25	053-0810-00	Housing Cap	1
26	040-0010-70	Screw	1
27	020-0169-00	Ballast	1
28	042-0157-04	Groove Pin	4
29	020-0168-00	Ballast Housing	2
30	040-0010-131	Screw	2
31	053-0802-00	Common Pivot Sleeve	1
32		Lamp Tube (Refer to “Lamp Tube Assembly” Elsewhere)	Ref.
33	525-0024-11	Spring	3
34		Serial Number Label	Ref.

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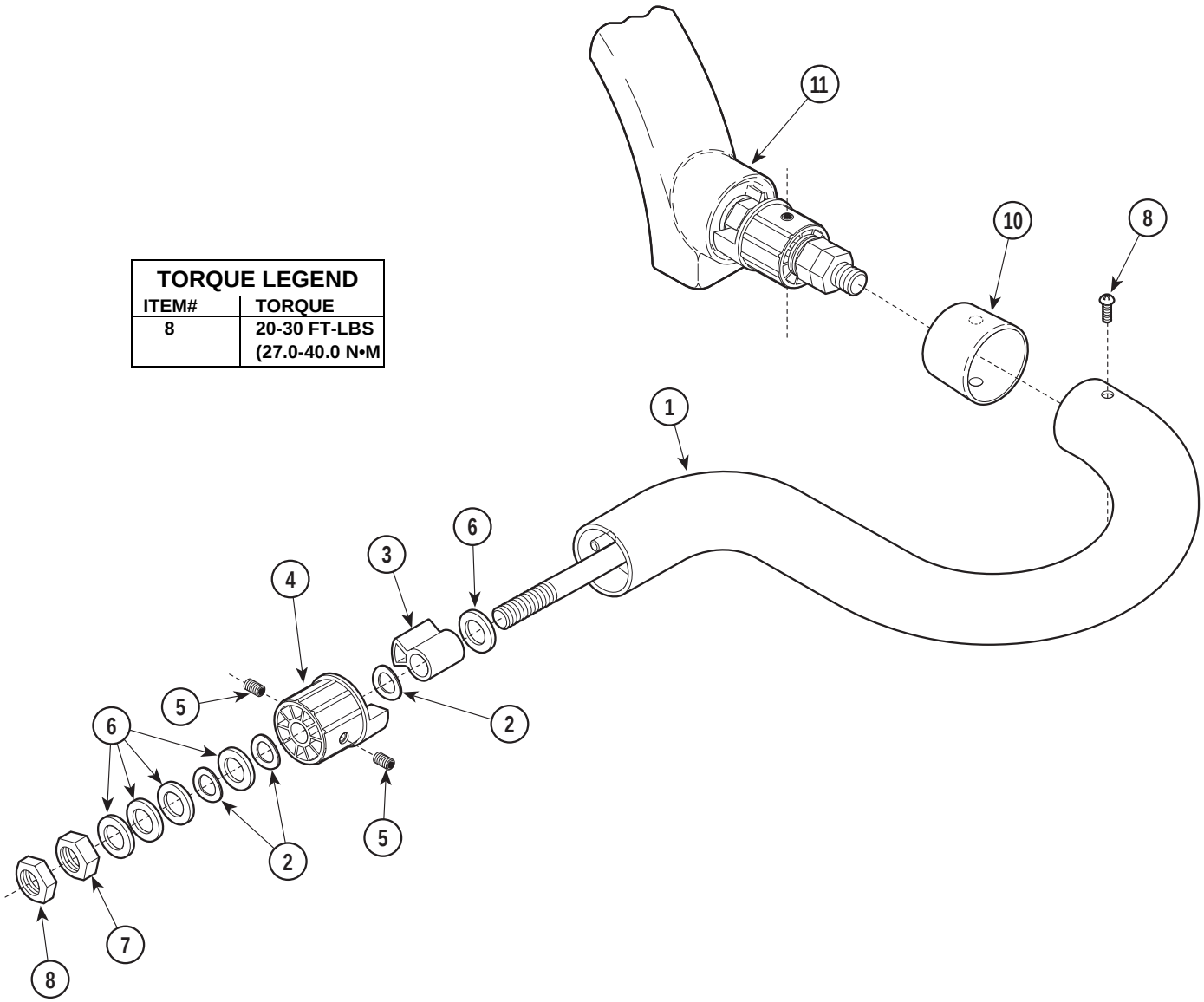
Lamp Tube Assembly

TORQUE LEGEND	
ITEM#	TORQUE
8	20-30 FT-LBS (27.0-40.0 N•M



MA318601

Item	Part No.	Description	Qty.
	029-1921-00	Lamp Tube Assembly (Includes Items 1 thru 8)	1
1	• 030-1009-00	• Lamp Tube Weldment (Includes Groove Pin)	1
2	• 045-0001-109	• Wave Washer	3
3	• 053-0811-00	• Cross Pivot Stop	1
4	• 053-0801-00	• Comon Pivot Bearing	1
5	• 042-0158-00	• Form-Lok Insert	2
6	• 045-0001-107	• Washer	5
7	• 041-0500-04	• Nut	1
8	• 041-0500-09	• Nut	1
9	040-0010-131	Screw	2
10	053-0802-00	Common Pivot Sleeve	1
11		Support Arm Pivot (Refer to “Support Arm Pivot Assembly” Elsewhere)	Ref.

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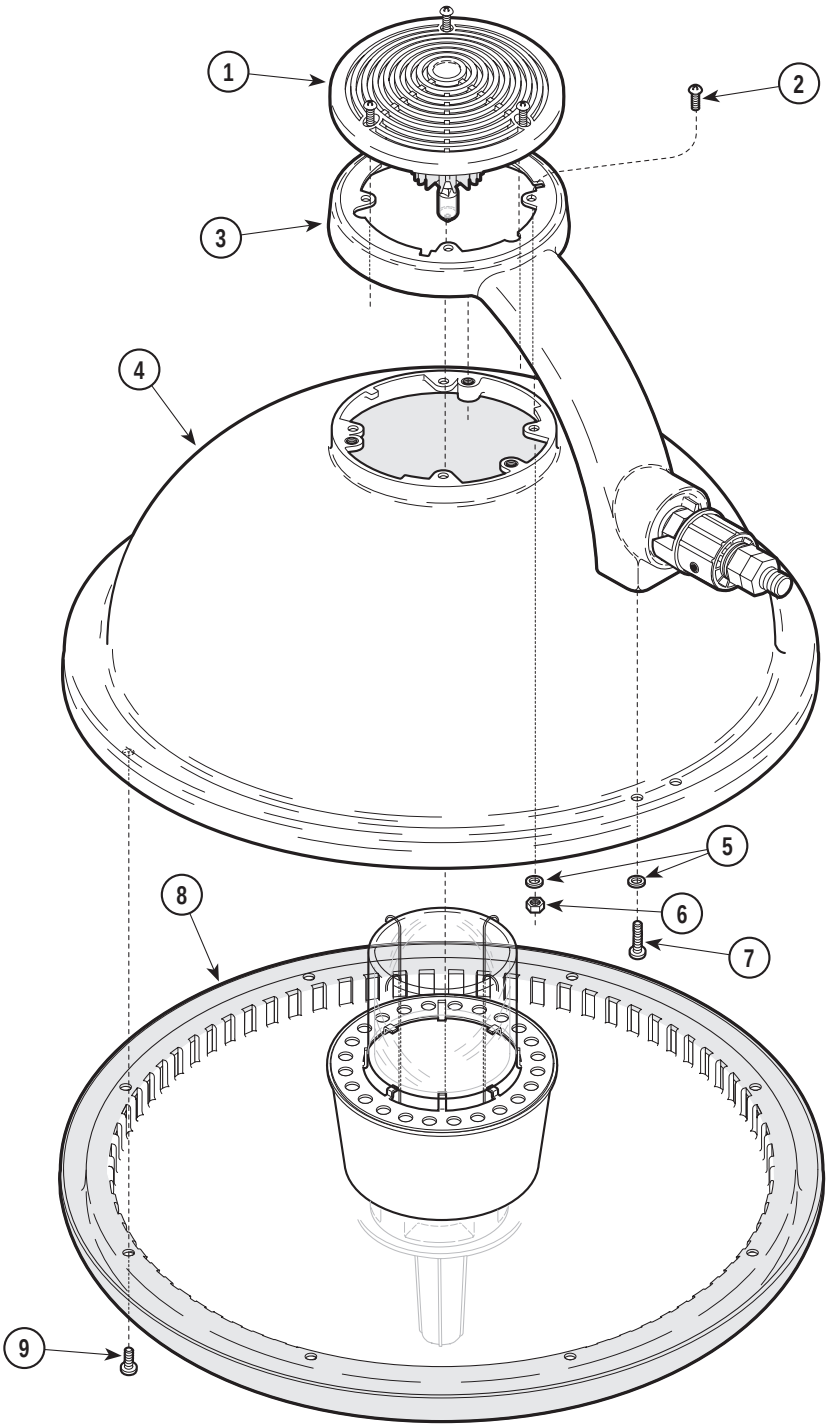
Lighthead Assembly



MA312500

Item	Part No.	Description	Qty.
	029-1806-00	Lighthead Assembly (Includes Items 1 thru 10)	1
1	• 002-0535-00	• Top Cap Assembly (Refer to “Top Cap Assembly” Elsewhere)	Ref.
2	• 040-0006-27	• Screw	4
3	• 029-1916-00	• Support Arm Pivot (Refer to “Support Arm Pivot Assembly” Elsewhere)	Ref.
4	• 053-0738-00	• Reflector	1
5	• 045-0001-21	• Lockwasher	6
6	• 041-0006-00	• Nut	4
7	• 040-0006-84	• Screw	2
8	• 029-1810-00	• Faceplate Assembly (Refer to “Faceplate Assembly” Elsewhere)	Ref.
9	• 040-0006-22	• Screw	8
10	• 015-1114-00	• Window Butt Splice (Not Shown)	1

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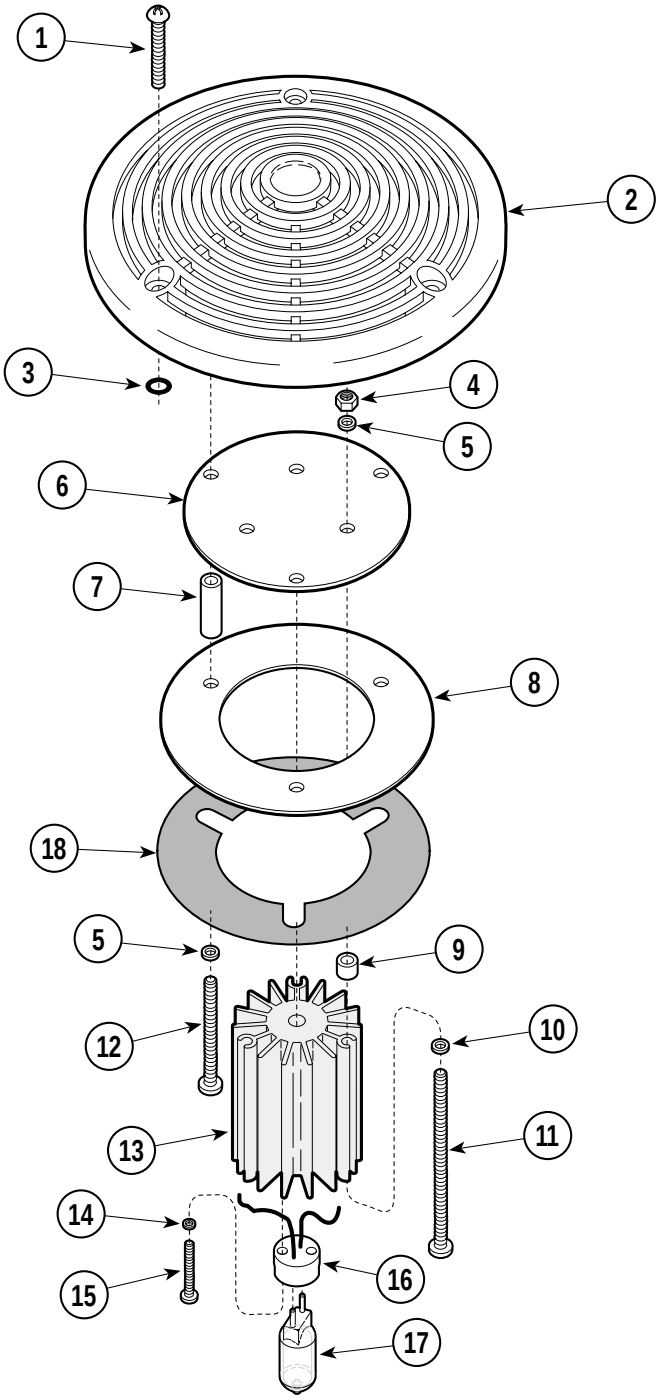
Top Cap Assembly



TORQUE LEGEND	
ITEM#	TORQUE
15	20-30 IN-OZ (0.14-0.21 N•M

MA312200

Item	Part No.	Description	Qty.
	002-0535-00	Top Cap Assembly (Includes Items 1 thru 17)	1
1	• 040-0006-78	• Screw	3
2	• 053-0925-00	• Top Cap	1
3	• 014-0176-36	• O-ring	3
4	• 041-0006-00	• Nut	3
5	• 045-0001-20	• Lockwasher	6
6	• 050-3426-00	• Mounting Plate	1
7	• 016-0656-01	• Rolled Spacer	3
8	• 050-3173-00	• Light Block	1
9	• 016-0656-00	• Rolled Spacer	3
10	• 045-0001-21	• Washer	3
11	• 040-0006-79	• Screw	3
12	• 040-0006-94	• Screw	3
13	• 021-0026-00	• Heat Sink	1
14	• 045-0001-38	• Lockwasher	2
15	• 040-0004-14	• Screw	2
16	• 015-1073-00	• Bulb Socket (Incls. Silicone / Fiberglass Sleeving [015-1146-01])	1
17	• 002-0529-00	• Quartz Halogen Bulb (100 Watt)	1
18	061-0612-00	Relamp Label	1
19	015-0013-06	Cable Tie (Not Shown)	1
20	015-114-00	Butt Splice (used on wires of item 16)	2

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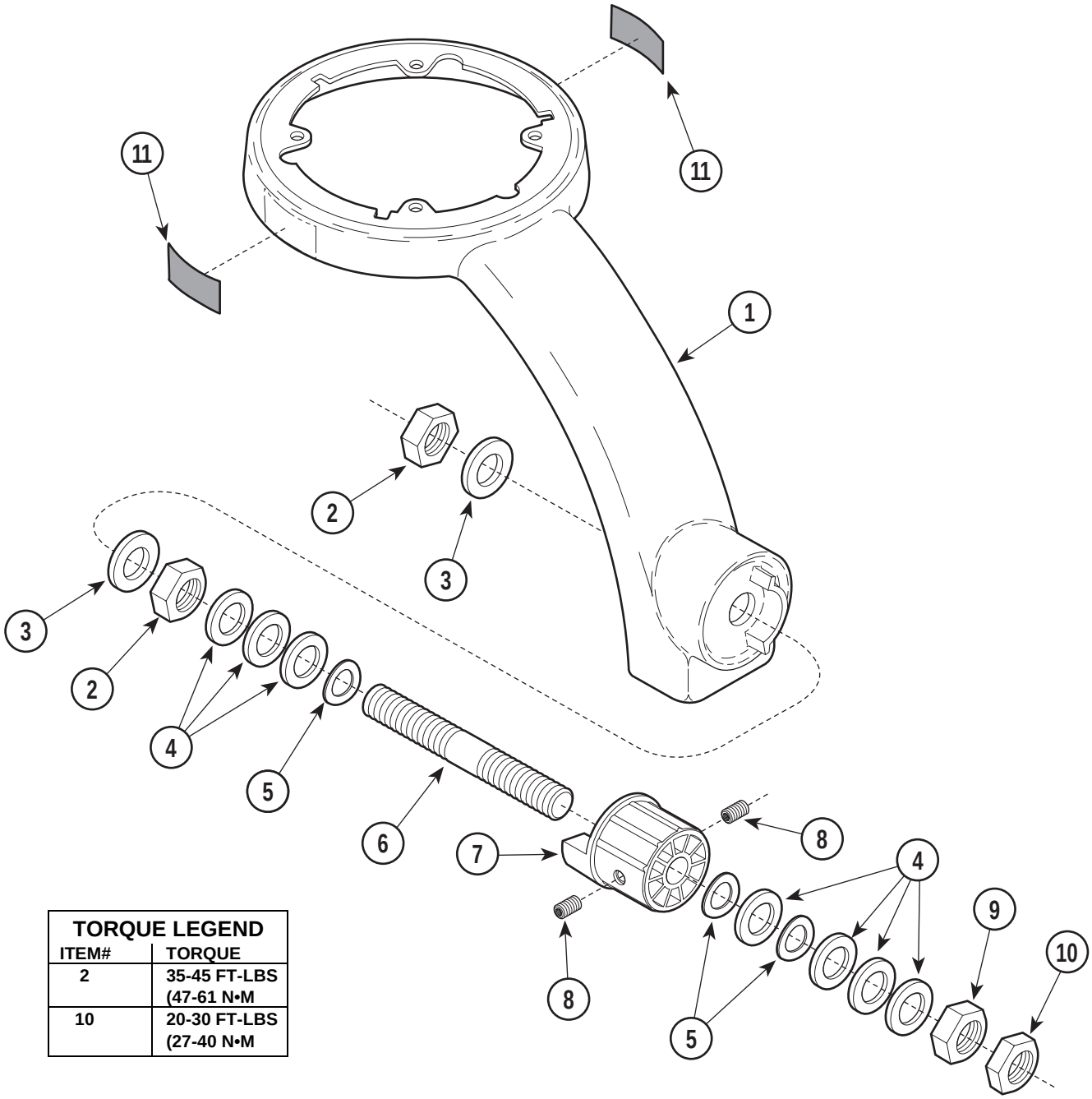
Support Arm Pivot Assembly



TORQUE LEGEND	
ITEM#	TORQUE
2	35-45 FT-LBS (47-61 N•M
10	20-30 FT-LBS (27-40 N•M

MA312400

Item	Part No.	Description	Qty.
	029-1916-00	Support Arm Pivot Assembly (Includes Items 1 thru 10)	1
1	• 020-0163-00	• Support Arm	1
2	• 041-0500-04	• Nut (Apply Loctite #042-0024-00)	2
3	• 045-0001-108	• Washer	2
4	• 045-0001-107	• Washer	7
5	• 045-0001-109	• Wave Washer	3
6	• 052-0259-00	• Lamp Pivot Shaft	1
7	• 053-0801-00	• Common Pivot Bearing	1
8	• 042-0158-00	• Form-Lok Insert	2
9	• 041-0500-04	• Nut	1
10	• 041-0500-09	• Nut	1

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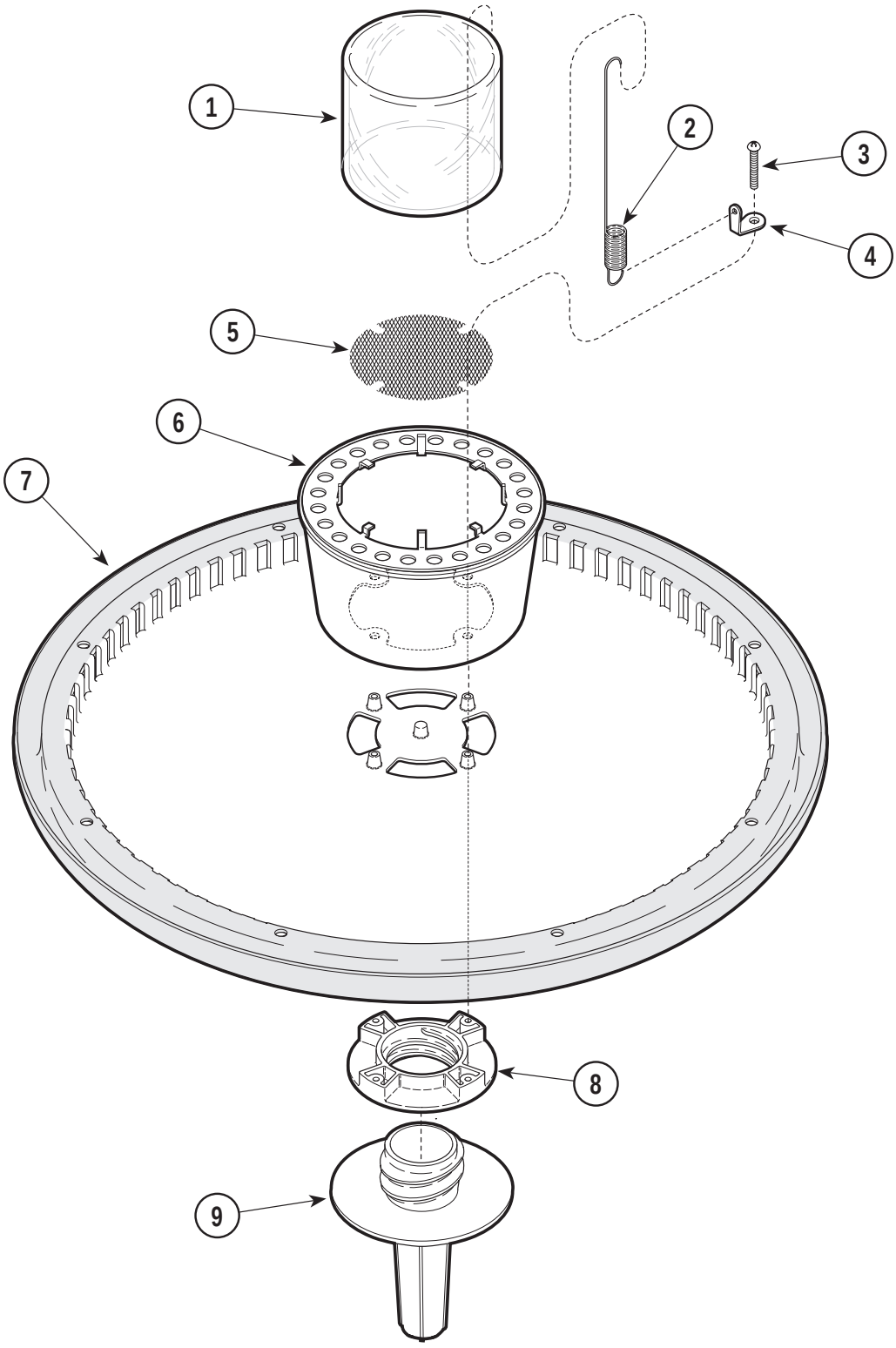
Faceplate Assembly



MA312300

Item	Part No.	Description	Qty.
	029-1810-00	Faceplate Assembly (Includes Items 1 thru 10)	1
1	• 053-0745-00	• IR Filter	1
2	• 025-0048-00	• Extension Spring	4
3	• 040-0006-81	• Screw	4
4	• 042-0152-00	• Solder Lug	4
5	• 016-0599-00	• Screen	1
6	• 029-1997-00	• IR Support Assembly	1
7	• 053-0742-00	• Faceplate	1
8	• 053-0743-00	• Handle Adapter	1
9	• 002-0530-00	• Sterilizable Handle	1

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Page(s) and Paragraph(s) Needing Changed:

Description of Error or Desired Change:

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FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:30 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT **OTHER** _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

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P.O. Box 286
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